<table>
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<tr>
<th>EVENT</th>
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<tr>
<td>PMSE CENTENNIAL RECEPTION</td>
<td>Monday, 5:30 – 7:30 PM PMSE Members: stop by Membership desk or view email for location</td>
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<tr>
<td>FUTURE LEADERS OF POLYMERIC MATERIALS SCIENCE AND ENGINEERING</td>
<td>Sunday, 2:00 – 6:00 PM Monday, 8:00 AM – 12:00 PM New Orleans Marriott Regent</td>
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<td>CELEBRATION OF SUCCESS AND NEW FRONTIERS IN POLYMERIC MATERIALS SCIENCE AND ENGINEERING</td>
<td>Monday, 2:00 – 5:40 PM Tuesday, 8:00 – 11:40 AM Tuesday 2:00 – 5:40 PM Wednesday, 8:00 – 11:40 AM New Orleans Marriott Regent</td>
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<td>PANEL DISCUSSION: THE FUTURE OF PLASTICS</td>
<td>Monday, 12:00 - 2:00 PM New Orleans Marriott Gallery 2</td>
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<td><strong>Boxed lunches provided while available</strong></td>
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<tr>
<td>CENTENNIAL POSTER SESSION AND BEST POSTER CONTEST FOR GRADUATE STUDENTS</td>
<td>Monday, 1:30 – 3:30 PM Tuesday, 1:30 – 3:30 PM New Orleans Marriott Studios 3-10</td>
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<tr>
<td>CENTENNIAL POSTER SESSION AND BEST POSTER CONTEST FOR EARLY CAREER RESEARCHERS IN ACADEMIA, INDUSTRY, AND NATIONAL LABS</td>
<td>Wednesday, 1:30 - 3:30 PM New Orleans Marriott Studios 3-10</td>
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<tr>
<td>CENTENNIAL POSTER SESSION AND BEST POSTER CONTEST FOR UNDERGRADUATE STUDENTS</td>
<td>Wednesday 1:30 – 3:30 PM New Orleans Marriott Studios 3-10</td>
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**PMSE CENTENNIAL EVENTS**

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![Chemglass Life Sciences](image)
PMSE PROGRAM

DIVISION OF POLYMERIC MATERIALS SCIENCE AND ENGINEERING

D. Watkins, D. Nepal, Y. Rao and C. Urdaneta Thomas, Program Chairs

SUNDAY MORNING
New Orleans Marriott
Regent

Fundamental Characterization and Properties of Polymers

C. Thomas, Organizer
K. Bichler, A. J. Porath, Presiding

8:00. Chemical security implementation on synthesis of poly (vinyl) acetate emulsion assisted by different hydrolysis degree of protective colloid agent. **M. Hafizah**

8:15. Position dependent segmental relaxation of bottlebrush polymers. **K. Bichler**, B. Jakobi, G. Schneider

8:30. Characterization of thermoset feedstocks for laser powder bed fusion. **M. Blackman**, M. Shofner, C. Chatham

8:45. Bio-derived nitrogenous flame retardant polymers. **C.E. Zavala**, B.G. Harvey

9:00. Withdrawn


9:30 Intermission.

9:45. Understanding the miscibility of silicone fluids with different structural characteristics. **D. Boucher**, D.C. Webster

10:00. SEC/MALS/VISC/DRI characterization of styrene oligomers. **A.M. Striegel**


10:45. Defects lower microporosity in high surface area porous aromatic frameworks. **A.J. Porath**, J.R. Bour


**SUNDAY MORNING**
New Orleans Marriott
Mardi Gras Ballroom Salon B

**Next Generation Structural Nanocomposites**

*Modeling Advances and Innovations in Nanocomposites*

M. B. Dickerson, O. McNair, D. A. Savin, R. Sweat, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05. Next generation ultra-strong composites for crewed deep space missions. **G. Odegard**

8:35. Multiscale modeling of polymer nanocomposite interphase. **B. Ma**, C. Brinson


9:35 Intermission.


10:25. Coarse-grained molecular dynamics simulations of polymer-grafted nanoparticles. **L.M. Hall**


SUNDAY MORNING
New Orleans Marriott
Galerie 5

Novel Applications of Polymeric Materials

C. Thomas, Organizer
D. L. Smith, E. Stacy, Presiding

8:00. Polyelectrolyte complex flame retardant treatment for cotton fleece. D.L. Smith, S.M. Cotton, N.A. Vest, M.D. Montemayor, J.C. Grunlan

8:15. Withdrawn

8:30. Withdrawn

8:45. Antifouling protection with plant extracts encapsulated into polymers - from short-term experiments to long-term. K. Bratley, E. Cable, B. Sylla, R. Buzzetto, L. Osman, V. Volkis


9:15. Withdrawn


9:45 Intermission.

10:00. Polymeric materials for enhanced ocular treatments. M. Karayilan, L. Yuan, K. Raheja

10:15. Withdrawn

10:30. Heat-activated formation of silica aerogels from water-enhancing fire gels. C. Dong

10:45. Bridging the gap to higher performance silicones for direct ink write. S. Schmidt, J. Grondz, M. Ford

11:00. Peptide-functionalized polyplexes for the targeted delivery of mRNA therapeutics. E. Stacy, P. Jankoski, T. Clemons

11:15. Suite of polydiacetylenes for comprehensive tamper indication. S.L. White, C. Curtis, C. Corbin
11:30. Incorporation of amphiphilic PDMS-based hyperbranched polyglycerol polymers to tune fouling-release properties. J. Dahlgren, D.C. Webster

SUNDAY MORNING
New Orleans Marriott
Mardi Gras Ballroom Salon A

Polymers That Are Non-Linear

Financially supported by Tosoh Bioscience

S. M. Grayson, D. Savin, Organizers
A. M. Evans, M. D. Giles, Presiding

8:00. Branched polymers via reversible addition-fragmentation chain transfer (RAFT) polymerization: Controlling degree of branching and functionality. P.R. Calvo

8:30. Dendrimer approach toward high permittivity polymer dielectrics for electrical energy storage. S. Daymon, B. Chen, O. Kareem, B.G. Olson, S.M. Grayson, S. Nazarenko

8:50. Complex and supramolecular macromolecular topologies towards AI/ML directed synthesis. R.C. Advincula


9:50 Intermission.

10:10. Dendritic polymers and hydrogels as antibacterial frameworks. Y. Fan, F. Namata, N. Sanz Del Olmo, M. Malkoch

10:40. Dendritic carriers as versatile platforms for targeted delivery of hydrophobic drugs. R. Sanyal

SUNDAY MORNING
New Orleans Marriott
Galerie 1

2D Materials-Polymer Interfaces and Nanocomposites

M. Katiyar, J. Kennedy, Organizers
B. Anasori, L. Beagle, A. Thakur, Organizers, Presiding

8:00 Introductory Remarks.

8:05. Discovery and advances on MXenes and MXenes-based composites. Y. Gogotsi

8:35. Photophysics of emerging 2D metal thio- and seleno-phosphates. R. Rao

8:50. Mechanical properties of polymer-supported graphene oxide membranes. H.P. Dhruve, K. Zaw, M. Sonker, S. Nair, M. Shofner

9:05. Chemistry of functionalized MXenes. A. Vojvodic

9:35. Tailoring nanoparticle surface chemistry with precision polymer ligands. C. Amofa, N.D. Ogbonna, M. Dearman, T. Oluwole, J. Lawrence

9:50. Polyethylene terephthalate functionalized graphene oxide prepared from plastic waste for applications as an upcycled plastic filler. W. Vickery, S.A. Sydlik

10:05 Intermission.

10:15. Novel 2D family transition metal Carbo-chalcogenides (TMCCS) potential candidate as functional additive materials. A. Majed, E. Loni, M. Naguib


11:15. When 2D materials meet polymers at the interface. G. Liu


11:45. Investigation of MXenes film stability towards oxidation by spectroscopic ellipsometry. H. Fang, A. Thakur, A. Arabi Shamsabadi, B. Anasori, Z. Fakhraai
SUNDAY MORNING
New Orleans Marriott
Galerie 3

Adaptive Materials from Dynamic Polymer Networks and Composites
Functional Dynamic Materials and Nanocomposites

Financially supported by Tosoh Bioscience LLC; Advanced Composites and Hybrid Materials; TA Instruments – Waters

C. Evans, Organizer
L. Baldwin, M. J. Webber, Organizers, Presiding

8:00. Introductory Remarks.

8:05. Recyclable Pani/Paampsa nanocomposite with repeatable, rapid, autonomous self-healing and unprecedented electro-mechanical properties. C. Duprey, Y. Lu, J. Jeon, L. Baldwin, Z. Farrell, E.K. Wujcik


8:35. Upcycling polyethylene and ethylene-containing polymers into covalent adaptable networks by one-step, radical-based reactive processing with a dynamic covalent crosslinker. J.M. Torkelson

9:00. Viscoelasticity of polymers with dynamic (reversible) bonds: Concepts and challenges. A.P. Sokolov


9:50 Intermission.


10:30. Using molecular dynamics to understand radiofrequency healing of vitrimer composites. A. Vashisth

10:55. Covalent adaptable networks comprised of dynamic carbon-nitrogen bonds. D. Zhang, A. Chao


SUNDAY MORNING
New Orleans Marriott
Galerie 4

Biological and Biologically Inspired Adhesion: Enhanced Bonding at the Interface Between Life and Materials Science

Financially supported by Army Research Office

M. T. Kozlowski, J. K. Montclare, Organizers
F. Cedano, H. Hess, Organizers, Presiding

8:00. Adhesion challenges for polymeric materials. J.A. Orlicki, M.T. Kozlowski, N.T. Tran, D.B. Knorr, M.A. Bartucci, J.L. Lenhart


8:45. Multisubstrate adhesion performance of pressure-sensitive acrylic adhesives with plant oil-based monomers. B. Domnich, H. Lynch, A. Voronov

9:00. Starch-based bioadhesive inspired by octopus adhesion behavior for sutureless corneal regeneration. B. Huang, W. Song, L. Ren


9:45 Intermission.

10:15. Biomimetic chemistry to create sustainable adhesives for a circular materials economy. J.J. Wilker

10:45. Biodegradable bottlebrush polymer adhesives. B. Saha, H. Chung

11:00. Cytosine- and ureidocytosine-containing acrylic copolymers with bisguanine physical crosslinkers for reversible adhesion. R.K. McDonough, B. Liu, D. Cappasola, T. Long


**SUNDAY MORNING**
New Orleans Marriott
Mardi Gras Ballroom Salon C

**Synthesis, Processing, and Fabrication of Polymeric Materials**

C. Urdaneta Thomas, *Organizer*
W. Paiva, N. Starvaggi, *Presiding*

8:00. Polybenzimidazole (PBI) membranes cross-linked with various cross-linkers and impregnated with 4-Sulfocalix [4] arene (Sca4) for organic solvent nanofiltration (OSN). **S.S. Beshahwored**

8:15. Influence of substrate morphology and rheological properties on the morphological evolution of polymer thin films during multiscale micro-pattern fabrication. **T. Teklehainanot**


8:45. Organocatalysis in ring opening copolymerization as a means of tailoring molecular weight dispersity and the subsequent impact on physical properties in 4D printable photopolymers. **D. Merckle**, A.C. Weems

9:00. Poly(vinylphosphonate)-based hydrogels exhibiting high biocompatibility and tunable material properties. **A.S. Maier**, S. Mansi, P. Mela, B. Rieger


9:45 Intermission.

10:00. Precision synthesis using nanoscale electrochemistry. **P. Wilson**


10:45. Non-aqueous emulsion ATRP for microcapsule formation. N. Starvaggi, E. Pentzer

11:00. Chitosan modified PLGA nanoparticles of gemcitabine HCl for enhanced cellular uptake. S. Powar, C.D. Bobade, G. Choudhari, V. Choudhari


11:45. Tuning the thermal response of 3D-printed hydrogels via architectural control. F. Klincewicz, S. Kalidindi, L. Korley

SUNDAY MORNING
New Orleans Marriott
Galerie 6

Synthesis, Processing, and Fabrication of Polymeric Materials

C. Urdaneta Thomas, Organizer
J. Lawrence, X. Xu, Presiding

8:00. Precise future: Advancing the frontiers of Polymer Science. J. Lawrence, N.D. Ogbonna, M. Dearman, C. Amofa, T. Oluwole

8:15. Melt processable insect repellent infused polymer formulations for textile applications. J. Jimenez, N. Hoffmann, J.A. Orlicki, J. Murphy, A. Fulton, M.D. Thum, J. Cilek, M. Perry, R. Casalini, J. Lundin

8:30. Electrically insulating and thermally conducting poly(ether ether ketone) composites with high loadings of boron nitride and aluminium nitride. S. Liu, A. Sirvent Mena, L. Pallon, K. Kallio, S. Montani, G. Hunt, Y. Negin, M. Hedenqvist

8:45. Constructing sensing fibers & textile with smart particles. J. Liu


9:45 Intermission.


10:15. Strategies for overcoming charge-related rheological challenges in the 3D printing via direct ink writing of weak polyelectrolyte complexes. **A. Nguyen, C. Patten, R. Advincula**


11:00. Withdrawn

11:15. Modular approach to non-conjugated redox-active polymers. **C.E. Van Pelt, B. Jenkins, S. Maurya, E. Pentzer**


11:45. Microbial production and chemical modification of designer polyhydroxyalkanoates for recyclable, reprocessable, and biodegradable rubber applications. **R. Clarke, N. Rorrer, G. Beckham**

**Catalysis in Plastic Recycling and Upcycling**
Sponsored by CATL, Cosponsored by ENVR, PHYS and PMSE

**Cellulose and Other Carbohydrate Materials for Water and Air Purification**
Sponsored by CELL, Cosponsored by CARB, PMSE and POLY
SUNDAY AFTERNOON
New Orleans Marriott
Mardi Gras Ballroom Salon B

Next Generation Structural Nanocomposites
Nanotubes in Structural and Multifunctional Composites

M. B. Dickerson, O. McNair, D. A. Savin, R. Sweat, Organizers, Presiding

2:00. Advanced multifunctional composites by novel processing/manufacturing. **L.J. Treadwell**


2:50. Elasto-plastic deformation of hydrogen-bonded glassy polymer nanofibers. A. Gaikwad, **P.V. Kolluru**


3:40 Intermission.

4:00. Influence of carbon nanotubes on poly (ether ketone ketone) crystallization kinetics and resulting multiscale semi-crystalline morphology. **N. Enos**, J.S. Wiggins


SUNDAY AFTERNOON
New Orleans Marriott
Galerie 5

Novel Applications of Polymeric Materials

C. Thomas, Organizer
H. Hunter, N. Kolishetti, Presiding

2:00. Fabrication of high-conductive Polyaniline composites by the 3D-Printing process with potential application as a strain sensor. K.Y. Patintildeo Jaimes, **J.H. Lambert**, R. Advincula


2:45. Nanomedicine technologies to tackle neuroHIV and associated neuroinflammation. **N. Kolishetti**

3:00. Polymer-drug conjugate for on-demand local anesthesia. **W. Zhang**

3:15. Exploring hydrogel-based reversible adhesives for structural applications. **J. Kopatz, K. Ghosh, M. Kaboolian, M. Murphy, E. Larkin, C. Roberts**

3:30. Responsive microgel-based systems for myriad applications. **M. Serpe**

3:45 Intermission.

4:00. Polyelectrolyte-encapsulated graphene-nylon microcapsules for osmotic water treatment. **B. Ferland, D.H. Adamson**


4:30. Aptamer modified stimuli-responsive microgel based optical sensors for cannabinoid sensing. **N. Balasuriya, M. Serpe**


5:00. Single-walled carbon nanotube chiral selectivity exhibited by commercially available hydrogels of varying composition. **S. Zanaoni, B.P. Watts, K.C. Tvrdy**

5:15. Optimizing microgel-based etalon responses for point-of-need sensors. **H. Hunter, M. Serpe**

5:30. Covalent organic frameworks (COFs) for lithium and magnesium separation from salt water. **A. Altaf, A. Khosropour, A. Zadehnazari, A. Abbaspourrad**
SUNDAY AFTERNOON
New Orleans Marriott
Galerie 6

Novel Applications of Polymeric Materials

C. Thomas, Organizer
P. Jankoski, M. D. Thum, Presiding

2:00. Therapeutic potential of versatile butyric acid-based self-assembling polymer prodrug in various diseases. B. Shashni, Y. Nagasaki

2:15. Synthetic glycopolymer-based hydrogels: A weak dynamic network for drug delivery. X. Wang, L. Kemp, C. Hudson, S.E. Morgan

2:30. 3D printed Biosponge adsorbers for capturing chemotherapy drugs before they spread through the body. H. Oh


3:00. Reinforcement and actuation behavior of poly(ionic liquid) ionogels for ionic soft actuators. K. Foley, S. Cockmon, A. Carrillo, K. Walters

3:15. Withdrawn


3:45 Intermission.


4:45. 4D printing of elastomers with multi-objective Bayesian optimization for personalized biomedical device fabrication. A. Mahjoubnia, J. Lin

5:15. Withdrawn

SUNDAY AFTERNOON
New Orleans Marriott
Mardi Gras Ballroom Salon A

Polymers That Are Non-Linear

Financially supported by Tosoh Bioscience

S. M. Grayson, D. Savin, Organizers
A. M. Evans, M. D. Giles, Presiding

2:00. Exploiting multivalent interactions at polymer brush interfaces for biomolecular recognition. A. Sanyal

2:30. Thermal transport in two-dimensional polymer systems. A.M. Evans

3:00. Theranostic nanoparticles via amphiphilic dendritic hybrid block copolymers (HBCs). D.L. Watkins

3:30 Intermission.

3:50. Stimuli-responsive heterografted multicomponent molecular bottlebrushes synthesized by a click grafting-to method. M.T. Kelly, B. Zhao

4:20. Engineering molecular architecture of antimicrobial peptide-polymer conjugates. Z. Cui, M. Crawford, B. Rumble, M. Krogh, E. Brna, M. Hughes, R. Letteri


SUNDAY AFTERNOON
New Orleans Marriott
Galerie 1

2D Materials-Polymer Interfaces and Nanocomposites

B. Anasori, L. Beagle, M. Katiyar, J. Kennedy, A. Thakur, Organizers
H. Fang, A. Vojvodic, Presiding

2:00 Introductory Remarks.

2:05. Direct Synthesis of Two-Dimensional Metal Chalcogenides Through Molecular Preorganization. S. Mathur

2:35. Withdrawn


3:05. Impact of functional polymers on electronic properties of graphene and nanoscale materials. T. Emrick

3:35. Polymer interfaces with controlled Dispersities. E. Benetti


4:05 Intermission.

4:15. Geometric assemblies of 2D nanosheet-polymer composites. S. Yang

4:45. Physical and chemical bonding at the interface of polymer and 2D material towards stronger biodegradable nanocomposites. V. Verma, A.K. Sonker, M. Belay, R.K. Nagarale


5:15. 2D nanocomposites and dynamic networks: From polymer films to 3D printing. R.C. Advincula

5:30. Light-responsive Mxenigel via interfacial host-guest supramolecular bridging. Y. Lin, J. Chen

**SUNDAY AFTERNOON**
New Orleans Marriott
Galerie 3

**Adaptive Materials from Dynamic Polymer Networks and Composites**

**Dynamic Polymer Networks and Additive Manufacturing**

Financially supported by Tosoh Bioscience LLC; Advanced Composites and Hybrid Materials; TA Instruments – Waters

L. Baldwin, C. Evans, M. J. Webber, *Organizers, Presiding*


3:00. Design strategies for tuning the properties of adaptive materials. **C.M. Bates**

3:25. Upcycling with dynamic bonds. **J.A. Kalow**

3:50 Intermission.

4:05. Towards an improved understanding of network fracture. **B.D. Olsen**

4:30. Dynamic covalent chemistry in Photoresin design for smart, functional 3D printing. **R. Smaldone**


5:20. Depolymerizable δ-lactone based polymers for recyclable vitrimers and 3D printing. L. Yue, **J. Qi**

SUNDAY AFTERNOON
New Orleans Marriott
Galerie 4

Biological and Biologically Inspired Adhesion: Enhanced Bonding at the Interface Between Life and Materials Science

Financially supported by Army Research Office

F. Cedano, H. Hess, *Organizers*
M. T. Kozlowski, J. K. Montclare, *Organizers, Presiding*

2:00. Bioinspired, fast, strong, and reversible hydrogel adhesives. **S. Yang**

2:30. Nonionic coacervates as photocurable underwater adhesives. **A. Narayanan,** X. Liu, A. Joy

2:45. New functionalities - new opportunities: the thiol-catechol connectivities (TCCS) inspired by nature and the key to (re)new(able) adhesives. **H. Boerner**

3:00. Development of antiviral polymers focused on Covid abatement. **D. Spivak,** V.N. Chouljenko, K. Kousoulas

3:15. Engineering biointerfaces for building tissue integration. **H.H. Lu**

3:45 Intermission.

4:15. Hemostatic tough adhesives rapidly seal tissue and control hemorrhage during surgery. **B. Freedman**

4:45. Cellulose acetate nanofibers membranes for controlled electrical environment for cells. **U. Stachewicz**

5:00. Underwater application of adhesives utilizing microcapsules on complex biofouled surfaces. **R. Messersmith**


5:30. Bioinspired complex coacervate-based adhesives. **M. Kamperman**
SUNDAY AFTERNOON
New Orleans Marriott
Regent

PMSE Centennial: Future Leaders of Polymeric Materials Science and Engineering

Financially supported by National Science Foundation; ExxonMobil; RSC Journals (Polymer Chemistry, RSC Applied Polymers, RSC Advances, RSC Applied Polymers); Gelest; University of Houston, Department of Chemical & Biomolecular Engineering; Tosoh Bioscience; Notre Dame Energy & Notre Dame Materials Science & Engineering Program; TA Instruments - Waters; Chemglass Life Sciences; University of Florida.

M. Golder, Organizer
K. Burke, H. Kim, A. Roy, Organizers, Presiding

2:00 Introductory Remarks.

2:05. Stereoselective cationic polymerization: Method development and computationally guided mechanistic studies. C. Sorensen, F.A. Leibfarth


2:55. Development and understanding of fused cyclobutane polymechanophores. M. Horst, Y. Xia

3:20 Intermission.


4:25. From polymers to power: Vat photopolymerization additive manufacturing of functional materials for energy, environment, and health applications. M.A. Saccone

4:50 Intermission.

5:05. Towards “Life-Like” Materials: Invoke soft material behavioral complexity from simplicity. S. Li, J. Aizenberg

5:30. “Glassy elastomers”: Reversing large plastic deformations in glassy polymer networks enabled by hydrogen bonding. C.J. Reese

5:55 Concluding Remarks.
Catalysis in Plastic Recycling and Upcycling
Sponsored by CATL, Cosponsored by ENVR, PHYS and PMSE

Cellulose and Other Carbohydrate Materials for Water and Air Purification
Sponsored by CELL, Cosponsored by CARB, PMSE and POLY

MONDAY MORNING
New Orleans Marriott
Galerie 3

Adaptive Materials from Dynamic Polymer Networks and Composites
_Hydrogels & Biomaterials_

Financially supported by Tosoh Bioscience LLC; Advanced Composites and Hybrid Materials; TA Instruments – Waters

M. J. Webber, _Organizer_
L. Baldwin, C. Evans, _Organizers, Presiding_

8:00. Double cross-linked hydrogels in microfluidics: A perfect match for catch and release. C. Jiao, D. Appelhans, B. Voit, _J. Gaitzsch_

8:15. Bioinspired peptide-polyurea hybrids as a platform for injectable hydrogels. _J.A. Thomas_, Z. Hinton, L. Korley

8:30. Linking molecular mechanisms to bulk rheology and assembly in dynamic covalent polymer networks. _A. Kuenstler_

8:45. _In situ_ mineralization in metal-coordinated polymer hydrogels: Progress, challenges and opportunities. _N. Holten-Andersen_

9:10. Effect of polymer architecture on flow behavior of dynamic covalent hydrogels. _A. Rosales_

9:35. Dynamic-covalent polymer networks with glucose-sensing bonding. _M.J. Webber_

10:00 Intermission.

10:15. Self-assembled living materials with dynamic polymer networks. _S. Sim_

10:40. Entropy-driven dynamic biomaterials enabling innovations in drug and cell delivery. _E.A. Appel_

11:05. Designing materials at the interface of nanotechnology and polymer chemistry. _E.S. Seo_


MONDAY MORNING
New Orleans Marriott
Galerie 4

Biodegradable Polymers, Biodegradation of Polymers, Bio-Derived Polymers: Sustainable Chemistry Drive to a Better Life

Bio-derived Polymers

H. Cramail, C. Shen, Organizers
C. Letko, Organizer, Presiding

8:00 Introductory Remarks.

8:05. Development of sustainable and recyclable polymers from lignin and CO₂. A. GHORAI, H. Chung

8:25. Synthesis of close-loop recyclable polyesters and thermoplastic elastomers. Z. Li

9:10. Formation of a sustainably sourced adhesive based on mussel chemistry capable of achieving high strengths. C. Westerman

9:30. Poly(aminoamides) as a new class of degradable high-strength CO₂-based polymers. J.M. Eagan

9:50 Intermission.

10:05. Polyhydroxyalkanoates: Production, applications and end-of-life. S. Pratt

10:50. Broadening the design space of polyhydroxyalkanoates via coupled architectural and stereomicrostructural engineering. M. Gace, E.Y. Chen


MONDAY MORNING
New Orleans Marriott
Mardi Gras Ballroom Salon B

Next Generation Structural Nanocomposites
Novel Nanoparticle Composites and Biological Applications

M. B. Dickerson, O. McNair, D. A. Savin, R. Sweat, Organizers, Presiding

8:00. Polymerization-induced nanoparticle ordering in nanocomposites. R. Hickey

8:30. Mixing rods and discs: Strong nanocomposites from aqueous hybrid liquid crystals. T. Dingemans, M. Hegde

9:00. Recyclable, reshapable, repairable and fire-resistant high-performance carbon fiber-biobased epoxy composites. A. Mija, R. Dinu, O. Damiano, U. Lafont


9:50 Intermission.


10:30. Withdrawn


MONDAY MORNING
New Orleans Marriott
Mardi Gras Ballroom Salon A

Polymers That Are Non-Linear

Financially supported by Tosoh Bioscience

S. M. Grayson, D. Savin, Organizers
Y. D. Getzler, J. Pribyl, Presiding

8:00. Comparison of the stability of perpendicular lamellae formed by linear block copolymers and their cyclic analogs. R. Kumar, W. Yang, H. Ashbaugh, J. Albert

8:20. Formation of cyclic polymers via nickel-catalyzed reductive coupling of dibrominated linear precursors. E.S. Tillman

8:50. Topology and dispersity: Additional parameters regulating the properties of functional polymer interfaces. E. Benetti

9:20. Recent advances in synthesizing cyclic polymers from vinyl monomers. J. Pribyl, M. Bronder, E. Sullivan

9:50 Intermission.


10:40. Unexpected discoveries during the ring-expansion polymerization of caprolactone derivatives. Y.D. Getzler

11:10. ZENO: A general methodology for computationally estimating the solution characterization properties of topologically complex polymers. J.F. Douglas
MONDAY MORNING
New Orleans Marriott
Galerie 1

2D Materials-Polymer Interfaces and Nanocomposites

B. Anasori, L. Beagle, M. Katiyar, A. Thakur, Organizers
J. Kennedy, Organizer, Presiding
Z. Fakhraai, Presiding

8:00 Introductory Remarks.

8:05. Understanding the role of confined water in Ti$_3$C$_2$Tx MXene stability. Z. Fakhraai, H. Fang, A. Thakur, A. Zahmatkeshsaredorahi, V. Rad, A. Arabi Shamsabadi, M. Soroush, X. Xu, B. Anasori

8:35. Learnings from interfaces of graphene with gel polymer electrolytes for miniaturized supercapacitors and bioelectrodes. F. Iacopi


9:05. Synthesis, characterization and application of two-dimensional materials and covalent organic frameworks nanocomposites. J. Lou

9:35. Polylsine functionalized calcium phosphate graphene with antibacterial and osteoinductive properties. J. Orlando, S.A. Sydlik

9:50. Optical performance and growth of Ti$_3$C$_2$T$_x$/polyelectrolyte layer-by-layer heterostructures. N. Neal, M. Green, M. Radovic, J.L. Lutkenhaus

10:05 Intermission.

10:15. Defect control in 2D materials: From functionalization and metal deposition to bio-applications. M. Terrones

10:45. New processing strategies for nanocomposites: Combining covalent adaptable networks and thermosets with low-dimensional fillers. A.J. Magenau

11:00. Investigation of conjugated sulfonamide materials as binders for organic lithium-ion batteries. J. Liu, D. Seferos


11:45. Ultrathin films of MXene nanosheets decorated by Ionic branched nanoparticles with enhanced energy storage stability. **P. Flouda**, A. Inman, M. Gumenna, D. Bukharina, V. Shevchenko, Y. Gogotsi, V.V. Tsukruk

**MONDAY MORNING**
New Orleans Marriott
Galerie 5

**Department of Defense Symposium on Excellence in Polymeric Materials Science and Engineering**
**Advances and Opportunities in Charge Transport**

Financially supported by UES Inc


8:00 Introductory Remarks.

8:05. Polymeric materials and Aerospace in 2030: Inventing the stuff that makes the future. **R.A. Vaia**

8:40. Intrinsically porous organic polymers: Design and application in sensing, high strength materials and catalysis. **T.M. Swager**

9:05. Solid-state charge and spin transport in nonconjugated radical polymers. **B.W. Boudouris**

9:30. Pi conjugated electroactive polymers for solid state and redox active applications. **J.R. Reynolds**

9:55 Intermission.

10:05. Chiral polymer photonics: Chirality-controlled optical and magneto-optical functions to impact DoD technologies. **P.N. Prasad**, J. Jojo, G. He, A. Baev

10:30. Light as a stimulus to controllably program mechanical and optical heterogeneity in soft materials. **Z.A. Page**

10:50. Narrow bandgap conjugated polymers with strong correlations and open-shell electronic structures: Towards new phenomena and emergent technologies. **J.D. Azoulay**

11:10. Color-changing optical devices enabled by ion-mediated deformation of polymer networks. **T.J. White**
11:35. Explorations of photonic and opto-electronic materials with DoD support. S. Marder

MONDAY MORNING
New Orleans Marriott
Galerie 6

Functional Conjugated Polymers: Design, Synthesis, Characterization, and Emerging Applications
Design and Synthesis

L. Fang, X. Gu, L. Kayser, Organizers
D. Baran, Organizer, Presiding
M. Matta, Presiding

8:00. Design strategy and applications of polyaniline derivatives. C.N. Scott, H. Giri, M.N. Almtiri, R.W. Wahalathantrige Don

8:25. Unexpected polymerization kinetics during the synthesis of a glycolated polythiophene. C.K. Luscombe

8:50. Breaking the solution aggregation of conjugated ladder polymers with strained and bulky side chains. J. Yang, g. ma, X. Gu, L. Fang


9:20. High-performance n-type polymer semiconductors for organic electronics. X. Guo

9:45 Intermission.


10:40. Molecular Dynamics simulations: A computational microscope to understand side chain trends in conjugated polymers. M. Matta

11:05. Synthetic engineering of graphene nanoribbons from bottom-up approaches. A. Keerthi


11:35. Exploring the potential of polydiacetylenes in organic electronics. S. Rondeau Gagne
MONDAY MORNING
New Orleans Marriott
Regent

PMSE Centennial: Future Leaders of Polymeric Materials Science and Engineering

Financially supported by National Science Foundation; ExxonMobil; RSC Journals (Polymer Chemistry, RSC Applied Polymers, RSC Advances, RSC Applied Polymers); Gelest; University of Houston, Department of Chemical & Biomolecular Engineering; Tosoh Bioscience; Notre Dame Energy & Notre Dame Materials Science & Engineering Program; TA Instruments - Waters; Chemglass Life Sciences; University of Florida.

M. Golder, Organizer
K. Burke, H. Kim, A. Roy, Organizers, Presiding

8:00 Introductory Remarks.


8:30. Applying materials science to RNA delivery. G. Tilstra, O. Khan


9:20 Intermission.


10:00. Fundamentals of hydraulic liquid transport in ion exchange membranes. R. Sujanani, K. Reimund, K. Gleason, B.D. Freeman


10:50 Intermission.

11:05. Advanced mass analysis characterizations of complex polymer systems. B.A. Suslick, J. Moore

11:55 Concluding Remarks.

MONDAY LUNCH HOUR
New Orleans Marriott
Galerie 2

12:00 – 2:00. PMSE Centennial Panel Discussion: The Future of Plastics

Moderator: Craig J. Hawker, University of California, Santa Barbara; Kathryn L. Beers, National Institute of Standards and Technology; Bradley D. Olsen, Massachusetts Institute of Technology; Theresa M. Reineke, University of Minnesota; Florian Schattenmann, Cargill; and Natalie Stingelin, Georgia Tech. *Boxed lunches provided while available.*

MONDAY AFTERNOON
New Orleans Marriott
Studio 3 – 10

PMSE Centennial Poster Session for Graduate Students

Financially supported by National Science Foundation

A. Figg, B. Singhi, C. Thomas, R. Yang, Organizers


1:30 M2. Synthesis of Linear and cyclic poly(hydroxypivalic acid). A. Nadeem, M. Redding, S.M. Grayson

1:30 M3. Poly(cannabidiol)s; antioxidant polyesters derived from natural materials for corrosion protection. A. Pollock


1:30 M5. Preparation and studies of New difunctional spirocyclic epoxy monomers. A. Kelly, D. Klosterman, A.B. Morgan, V.A. Benin

1:30 M6. Polypropylene-based chemically recyclable engineering polyolefins. A. Tiiaara, I. Luzinov

1:30 M7. Chemically recyclable polyolefin-based ester-linked polymers. A. Tiiaara, I.A. Luzinov

1:30 M9. Linear-dendritic polymers via thiol-yne "click" chemistry. A. Miles, A. Huskey, A. Nuzzo, S.M. Grayson

1:30 M10. Core-shell hybrid filaments for 3D printing vis fused filament fabrication. B. Daichendt, P. Brown, I.A. Luzinov

1:30 M11. Influence of interfacial anchoring on properties of structures 3D printed using core-shell hybrid filaments. B. Daichendt, I.A. Luzinov, P. Brown

1:30 M12. 3D printed cellulose nanocrystal coatings with infra-red reflectance: Continuous to discrete chiral films. B. Dimitrov, D. Bukharina, V.V. Tsukruk

1:30 M13. Efficient assembly of genes that encode repetitive fusion protein biomaterials. B.M. Wirtz, D.J. Mai


1:30 M15. Deep eutectic solvents utilized in high-temperature HIPE formation, stabilized with graphite/graphene. C.E. Gouveia, D.H. Adamson

1:30 M16. Synthesis of chelating polymers via raft polymerization of activated ester monomers and post-polymerization functionalization. C. Yeary, P.R. Calvo

1:30 M17. Responsive polymeric capsules as feedstocks for creating functional solid-liquid composites. C. Hsieh, L. AlMahbobi, M. Avais, P. Wei, Y. Wang, E. Pentzer

1:30 M18. Fabrication of conductive polymers for sensing applications. C.T. Gordon, T.M. Swager


1:30 M24. Copolymerization kinetics of vinylbenzyl trioctyl phosphonium chloride and n-butyl acrylate and the ionomer’s effects on its comonomer’s kinetics. E. Tong

1:30 M25. Biodegradable polymers from sustainable sources for addressing plastic waste in oceans and landfills. E. Enebeli, Y. Tang, J.D. Smith, F. Khakzad, M. Robertson


1:30 M29. Sulfonated lignin nanocomposites as ion-exchange membranes in a redox flow battery. F. Brito, P.S. McMichael, A. Whitbeck, E. Gyenge, J. Foster

1:30 M30. Enhancing selective copper recovery with chelating group functionalized membranes. F. Chen, e. deemer, R. Verduzco

1:30 M31. Surfactant-assisted on-acid interfacial synthesis of conjugated polymer membranes for organic solvent nanofiltration. F. Abani, L. Fang

1:30 M32. Decoration of cellulose nanocrystals with a photo-sensitive mesogen for stimuli-responsive stretchable optics. F.K. Masese

1:30 M33. High-performance polyimides for continuous carbon fiber composites. G. Nayyar, C.W. Weyhrich, T. Long

1:30 M34. Mechanochromic fluorescent polymer materials derived from quinacridone. G. Yu

1:30 M35. Sustainable and degradable pressure-sensitive adhesive and soft Superelastomer prepared through metal-free polymerizations. H. Jeong, H. Lee, J. Shin

1:30 M36. Coaxial electrospun conjugated polymer fibers with enhanced stretchability and reversibility. H. Ahmad, M. Britton, M. Gangishetty, S. Kundu

1:30 M37. Desalination pervaporation performance of sulfobetaine-modified poly(arylene ether sulfone) copolymer dense membranes. H. Mithaiwala, M. Green

1:30 M39. Integration of reactive polymers and strain sensors for chemical sensing. H. Seo, J. Lim, J. Heo, J. Ryu

1:30 M40. Photoinitiated polymer networks for drug delivery systems using thiol-ene click chemistry. I. Hoffman, D.Y. Son

1:30 M41. Photophysics and heparin fluorescence sensing of poly(phenylene ethynylene) conjugated polyelectrolytes with phosphonium functionality. I.J. Barboza Ramos, K.S. Schanze

1:30 M42. Design and synthesis of Polypentenamer-based bottlebrush elastomers. J. Jang, C. Leo, P. Santiago, J.G. Kennemur

1:30 M43. Overview of broadband dielectric spectroscopy and its applications in 3D printing and polymer characterization. J.H. Lambert, Y. Wang, R. Advincula


1:30 M47. Indium doped ZnO/polyaniline nanocomposites as a DMMP gas sensor at room temperature. J. Rodrigues, N. Shimpi


1:30 M49. Beyond lattice matching: The role of hydrogen bonding in epitaxial nucleation of Poly(hydroxyalkanoates) by methylxanthines. J. Bledsoe, G. Crane, J.J. Locklin

1:30 M50. Physico-chemical study of ammonium-based thin films for moisture-swing direct air capture. K. Niimoto, M. Green, K. Lackner

1:30 M51. Dynamic modification of surface polymer brushes via stimulated Pani Electrodepositied: Si-pet-raft approach for tunable surface properties. K.Y. Patino Jaimes, E. Winn, R. Advincula

1:30 M52. Polymers from epoxidized soybean oil using enzyme catalyst. K. Elmore, S. Kundu


1:30 M57. Enhancing stability in organic field-effect transistors through innovative synthetic approach. **K. Thapa**

1:30 M58. Terpene-derived polyesters from verbenone: Polycondensation reactions to generate greener alternatives to petroleum-based thermoplastics. **L. Kennedy**, T.N. Thompson, M.D. Schulz

1:30 M59. High-performance quasi-2D perovskite solar cells based on self-assembled conjugated polyelectrolyte. T. Yang, H. Huang, Y. Chen, W. Nie, H. Tsai, **L. Wang**

1:30 M60. Loading of ionic liquid to beta-cyclodextrin for anti-corrosion additives in epoxy coating. M. Pasciolco, **L.L. Yasis**, W. Han, K. Yeung


1:30 M62. Integration of waste heat in direct air capture systems for sorbent regeneration and upgrading of carbon dioxide concentration. **L. Hamblin**, K. Lackner, M. Green

1:30 M63. Bioinspired structural color with multi-stimuli-responsiveness by tailored chemical design and processing of core-shell polymer particles. **L. Siegwardt**, R. Leiner, M. Gallei

1:30 M64. Sturdy compostable materials that degrade on command: A new approach to managing waste. **M. Srivastava**, I. Philip, S.R. Raghavan
MONDAY AFTERNOON
New Orleans Marriott
Galerie 1

2D Materials-Polymer Interfaces and Nanocomposites

B. Anasori, L. Beagle, J. Kennedy, A. Thakur, Organizers
M. Katiyar, Organizer, Presiding
A. Arabi Shamsabadi, Presiding

2:00 Introductory Remarks.

2:05. Abstract for Alan Dalton. A. Dalton

2:35. Hbn nanosheets as emulsifier and antimicrobial agents blended to soybean oil for paper packaging applications. V. Kumar, M. Rabnawaz

2:50. Study of the behaviour change in the optical and electronic properties of amine doped graphene oxide with various concentration of EDA as dopant. M. Eliyas, A. Rana

3:05. Recyclable and biodegradable smart electronic circuits on flexible substrates. H.O. Shoyiga, V.O. Nyamori, B.S. Martincigh


3:35 Intermission.

3:45. 2D Flatland: From fundamental science to engineering applications. A.X. Zhang

4:15. Functionalized magnetic porous polymers for water remediation. S. Saidi

4:30. Friction and Super-lubricating properties of surface-attached hydrogels. R. Maraula, J. Rühe

MONDAY AFTERNOON  
New Orleans Marriott  
Galerie 4  

Biodegradable Polymers, Biodegradation of Polymers, Bio-Derived Polymers: Sustainable Chemistry Drive to a Better Life  
Bio-degradation of Polymers  

H. Cramail, C. Shen, Organizers  
C. Letko, Organizer, Presiding  

2:00 Introductory Remarks.  

2:05. Degradation of biodegradable polymers in the lab and in the environment. F. Burgevin  

2:25. Is designing for “biodegradality and compostability” a solution to plastic wastes?. N. Ramani  


3:50 Intermission.  


5:10. Tailor-made biosynthesis of polyhydroxyalkanoates: Towards polymers with planned biodegradation. S. Bruzaud  

MONDAY AFTERNOON
New Orleans Marriott
Galerie 5

Department of Defense Symposium on Excellence in Polymeric Materials Science and Engineering
Advances and Opportunities in Multifunctional Composites

Financially supported by UES Inc

K. Caster, R. Lambeth, M. Laskoski, D. Nepal, Organizers, Presiding

2:00. Ionotronic Modulation of MXene Properties. Y. Gogotsi


3:15. 3D printing of green metal-carbide composites for energy, bio-medicals, and sensor applications. C.S. Tiwary

3:35 Intermission.

3:50. Designing biomimetic composites with nonrandom disorder. N. Kotov

4:15. Reaction induced phase separation in advanced composite materials. N. Clarke

4:40. Investigation of network structure and mechanical properties in ROMP products. B. Trinh, A. Boydston

5:00. Interfaces in composite materials: A crucial aspect of material performance. L.C. Henderson

MONDAY AFTERNOON
New Orleans Marriott
Mardi Gras Ballroom Salon B

Next Generation Structural Nanocomposites
Ceramic Nanocomposites and Interface Dynamics

M. B. Dickerson, O. McNair, D. A. Savin, R. Sweat, Organizers, Presiding

2:00. Developing advanced ceramic materials via preceramic polymer chemistry and an enhanced understanding of structure-property relationships. N. Bedford

2:30. Refractory ceramic nanocomposites using high Char polymers. M. Laskoski

3:00. Reprocessible co-continuous ceramic-polymer composites through cold sintering. B.D. Vogt, P. Lai, E. Gomez

3:30 Intermission.

3:50. Tailoring interfaces in composites to enhance performance and multifunctionality. L.C. Henderson


MONDAY AFTERNOON
New Orleans Marriott
Regent

PMSE Centennial: Celebration of Success and New Frontiers in Polymeric Materials
Science and Engineering
Advanced Manufacturing & Electronics

Cosponsored by WCC

Financially supported by National Science Foundation; ExxonMobil; RSC Journals (*Polymer Chemistry*, *RSC Applied Polymers*, *RSC Advances*, *RSC Applied Polymers*); Gelest; University of Houston, Department of Chemical & Biomolecular Engineering; Tosoh Bioscience; Notre Dame Energy & Notre Dame Materials Science & Engineering Program; TA Instruments - Waters; Chemglass Life Sciences; University of Florida

M. Grunlan, L. Korley, Q. Lin, *Organizers*
C. Soles, *Organizer, Presiding*

2:00. Foundational tools, techniques, and materials as outputs of the modern age of nanotechnology. **C.A. Mirkin**

2:25. Design and processing of conductive polymers structures for haptics and rehabilitation. **D.J. Lipomi**

2:50. Advanced manufacturing of polymers from nano- to micro- to macro for intelligence and energy efficiency. **S. Yang**
3:15. Future of polymer materials and additive manufacturing. **R.C. Advincula**

3:40 Intermission.

4:00. **Award Address** (ACS Award for Encouraging Women into Careers in the Chemical Sciences sponsored by the Camille and Henry Dreyfus Foundation). ACS encouraging women into Careers in the Chemical Sciences/Women Chemists Committee award address: Polymers in electronics - from patterning materials to stretchable devices. **E. Reichmanis**

4:25. Degradable conjugated polymers. **H. Tran**

4:50. Understanding the device stability through the lens of semiconductive polymer’s chain dynamics. **X. Gu**

5:15. New frontiers in bottom-up polymeric materials and processes for high-precision nanopatterning. **R. Ruiz**
MONDAY AFTERNOON
New Orleans Marriott
Mardi Gras Ballroom Salon A

Polymers That Are Non-Linear

Financially supported by Tosoh Bioscience

S. M. Grayson, D. Savin, Organizers
Y. D. Getzler, J. Pribyl, Presiding


3:00. Solution and interfacial assembly of comb-shaped polypeptoid block or random copolymers. D. Zhang

3:30. Designing precision bottlebrush polymers with tailored ionic and hydrophobic side chains for enhanced solubilization and improved MR Imaging. N.D. Ogbonna, T. Oluwole, M. Dearman, C. Amofa, J. Lawrence

3:50 Intermission.


4:50. Complex nonlinear polymer architectures by ring opening polymerization of amino acid N-carboxyanhydride. M. Barz

5:20. Substituent effects on the cleavage efficiency of a phenyl ester mechanophore. H.C. Spencer, D. Spivak
MONDAY AFTERNOON
New Orleans Marriott
Galerie 3

Adaptive Materials from Dynamic Polymer Networks and Composites
Designing Responsive Dynamic Materials

Financially supported by Tosoh Bioscience LLC; Advanced Composites and Hybrid Materials; TA Instruments – Waters

C. Evans, Organizer
L. Baldwin, M. J. Webber, Organizers, Presiding


2:15. Coarse-grained molecular dynamics simulations on mechanical properties of dynamic bond elastomers with entropy/enthalpy-driven mechanisms. Y. Yasuda, S. Nakagawa, H. Houjou, N. Yoshie, H. Morita


4:00 Intermission.

4:15. Linear viscoelasticity of polybutadiene vitrimers. R. Ricarte, S. Shanbhag

4:40. Dynamic covalent bond exchange for multimodal damping spectra. C. Evans

5:05. Anion-driven supramolecular polymers come and go under dissipative chemistry. A.H. Flood


5:45. Enhancing the equilibrium of dynamic Thia-Michael reactions through strategic modification. A.E. Crolais, N. Dolinski, S.A. Snyder, S.J. Rowan
MONDAY AFTERNOON
New Orleans Marriott
Galerie 6

Functional Conjugated Polymers: Design, Synthesis, Characterization, and Emerging Applications
Materials for Mixed Transport

D. Baran, L. Fang, X. Gu, Organizers
L. Kayser, Organizer, Presiding
A. Gumyusenge, Presiding

2:00. Semiconducting polymers for organic electrochemical transistors. I. McCulloch

2:25. Designing multifunctional mixed ionic-electronic conductive co-polymers. A. Gumyusenge


3:05. Optimizing the conjugated polymer structure and morphology for near-infrared electrochromic devices. R.M. Pankow, A. Facchetti, T.J. Marks


3:45 Intermission.


4:40. Organic mixed conductors for brain-inspired electronics. S. Fabiano

5:05. Controlling nanofiber formation via solution pre-aggregation in n-type conjugated polymers for stretchable electronics. Y. Zhang, D. Rosas-villalva, L. Zhao, J. Han, D. Baran

5:20. Improving mechanical compliance of donor-acceptor polymers for bioelectronics. A. Lin, H. Tran

5:35. Understanding and tailoring the properties of PEDOT: PSS for organic electrochemical transistors. L. Kayser
MONDAY AFTERNOON
Virtual Only
Virtual Session

Novel Applications of Polymeric Materials

C. Thomas, Organizer
M. Ezazi, Presiding

3:00. Application of PVA as a constituent material of the catalyst in the oxidative reaction of white phosphorus. A. Omirzakova, D. Kalikh, B. Bakirova, D. Akbayeva


3:30. Controlled anticancer peptide release using multiresponsive hydrogel/nanoparticle system. L. Resina, T. Esteves, S. Pérez-Rafael, F.C. Ferreira, T. Tzanov, D. Díaz Díaz, C. Aleman

3:45. Self-healable, stretchable and conductive hydrogel for skin regeneration. L. Resina, F.F. Garrudo, R. Colaço, A.C. Marques, J. Morgado, C. Aleman, T. Esteves, F.C. Ferreira

4:00 Intermission.

4:15. Zwitterionic halophilic polymers: Multi-responsive materials for diverse applications. V. Arjunan Vasantha

4:30. Visible light-curable non-fluorinated coatings with low water contact angle hysteresis. M. Ezazi

4:45. Measuring magnetic susceptibility and density of microparticles using a magnetic levitation platform. B. Karakuzu, E. Ozcivici, H. Tekin

MONDAY EVENING
Ernest N. Morial Convention Center
Hall C

PMSE Sci-Mix

8:00. Solvent-dependent sorption of recycling contaminant surrogates in polypropylene food contact materials. Y.S. Song, H. Wang, S. Senthilkumaran, J.L. Koontz

8:00. Computational investigation of nanoparticle agglomeration in PLA-glass/iron nanocomposites. W.A. Pisani, J.K. Newman, M.K. Shukla


8:00. Development of single source liquid phase precursors for HFC-SiCN ceramic mini composites with enhanced oxidation resistance. S. Mujib, A. Roy, B. Walke, S.R. Arunachalam, G. Singh

8:00. Thermally stable ceramics derived from crosslinked borate containing pre-ceramic polymers. C. Curtis, C. Corbin

8:00. Iyonically-crosslinked polyelectrolyte treatment for fire retardant polyester. D.L. Smith, N.A. Vest, M.O. Convento, M.D. Montemayor, J.C. Grunlan

8:00. Additive manufacturing of polymer-derived ceramics with novel thermal NIR laser stereolithography. E. Wang, M. Hickner

8:00. Deep eutectic solvents utilized in high-temperature HIPE formation, stabilized with graphite/graphene. C.E. Gouveia, D.H. Adamson


8:00. Overview of broadband dielectric spectroscopy and its applications in 3D printing and polymer characterization. J.H. Lambert, Y. Wang, R. Advincula

8:00. Bioinspired structural color with multi-stimuli-responsiveness by tailored chemical design and processing of core-shell polymer particles. L. Siegwardt, R. Leiner, M. Gallei

8:00. Synthesis of chelating polymers via raft polymerization of activated ester monomers and post-polymerization functionalization. C. Yeary, P.R. Calvo

8:00. Responsive polymeric capsules as feedstocks for creating functional solid-liquid composites. C. Hsieh, L. AlMahbobi, M. Avais, P. Wei, Y. Wang, E. Pentzer

8:00. Thermodynamic insights into rare-earth element chelation by metal-binding oligomers. C.M. Gallagher, T.D. Ermolaev, M.D. Schulz
8:00. Bioactive surfaces through affinity tag protein-polymer conjugation. A. Necaise, M. Rahman, T. Clemons

8:00. Enhancing selective copper recovery with chelating group functionalized membranes. F. Chen, e. deemer, R. Verduzco

8:00. Antimicrobial polymer-based coating against non-enveloped MS2 bacteriophage: virucidal efficiency and potential inactivation mechanism. L.L. Yasis, S.H. Garcia, K. Yeung

8:00. Integration of reactive polymers and strain sensors for chemical sensing. H. Seo, J. Lim, J. Heo, J. Ryu

8:00. Preparation and studies of New difunctional spirocyclic epoxy monomers. A. Kelly, D. Klosterman, A.B. Morgan, V.A. Benin

8:00. Bottlebrush polymer excipients for enhancing solubility of an oral drug. K. Barr, F.S. Bates, T.M. Reineke

8:00. Core-shell hybrid filaments for 3D printing vis fused filament fabrication. B. Daichendt, P. Brown, I.A. Luzinov

8:00. 3D printed cellulose nanocrystal coatings with infra-red reflectance: Continuous to discrete chiral films. B. Dimitrov, D. Bukharina, V.V. Tsukruk

8:00. Influence of interfacial anchoring on properties of structures 3D printed using core-shell hybrid filaments. B. Daichendt, I.A. Luzinov, P. Brown

8:00. Phytochemical screening of essential oil and evaluation of antimicrobial activity and antioxidant properties of plant essential oil-loaded biopolymer as a potential wound healing. T.M. Omoyeni, D. Kavaz

8:00. Tailoring bio-based polyester UV-curable resins with tunable mechanical properties suitable for SLA 3D printing applications. S. Bokhari, J.M. Catchmark, S.C. Chmely

8:00. Probing dynamics: Triggering changes in hydrogel-based synthetic extracellular matrices with light toward understanding lung injury and disease. S. Swedzinski, J. Graf, L. Pradhan, A.M. Kloxin

8:00. Enhancing cancer therapy: Nir responsive drug delivery via silica coated gold nanorods incorporating thermoresponsive polymer coating. R. Gautam, K. Dhiman, D. Soni

8:00. Preparation and structural analysis of polymer-derived ceramic nanocomposites. V. Mullins, J.S. Wiggins

8:00. Delivering genes with quinine-based polymers. P. Roy, N.W. Kreofsky, C. Van Bruggen, M. Brown, T.M. Reineke

8:00. Electrophoretically deposited TiO$_2$-containing pectin smart and corrosion-resistant composite coatings. **M. Domalanta**, E. Caldona

8:00. N-type conjugated polymer. **V. Verma**


8:00. Polymeric copper chelator for long-term inhibition of breast cancer proliferation and lung metastasis. **X. He**

8:00. Engineered chirality inversion of light in helicoidal biocomposite thin films. **D. Bukharina**, L. Southard, B. Dimitrov, S. Kang, P. Min, V.V. Tsukruk

8:00. Fabrication of nanostructured fuel cell membranes using liquid crystal based materials. **R. Dong**, C. Johnson, C.O. Osuji

8:00. Synergistic copolymer blending informs efficient terpolymer design for high performance PDNA delivery. **M.C. Leyden**, F. Oviedo, R. Kumar, N. Le, T.M. Reineke

8:00. Comprehensive analysis of epoxy resin micro-composite inks for the improvement of processability and printability in direct ink writing. **Z. Smith**, R. Advincula

8:00. Real-time rigidity tuning in recycled polyolefins through PME 3D printing. **X. Miao**, A. Boydston

8:00. Versatile heterogeneous porous organic polymer catalyst for cross-coupling reactions. **M.C. Warndorf**, A. Alexander-Katz, T.M. Swager

8:00. Promising eco-friendly polymers for corrosion inhibition of AZ31 magnesium alloy in simulated body fluid. **A. Aleid**, S.A. Umoren

8:00. Characterization of evolving carbon structures from Bis-ortho-diynylarene (BODA)-derived polynaphthalene networks via non-isothermal TGA kinetics and pyro-GCMS. **J.M. Brown**, P.A. Madden, **E. Borrego**, D.W. Smith

8:00. Accuracy of a computational model to predict 3D printed copolymer biliary stent behavior. M. Verheyen, A. Westbrook, J. Hall, A. Cronin, J. Thomas

8:00. Enhancing the mechanical properties of poly(styrene-butadiene-styrene) with layered double hydroxide nanoparticles through varied coating techniques. J.D. Pulla, K. Shen, L. Sun

8:00. Controlling material degradability through sterochemistry. A.G. Loar, B. Baez, S. Brucks

8:00. Designing robust microgels: A double network approach. C.V. O'Dell, A. Smith

8:00. Aggregation Behavior of Current Doped Poly(3-hexylthiophene). E. Gibson, S. Mo, N. Kreis, S. Guo

8:00. Synthesis and evaluation of a Diels-Alder polyphenylene with tethered multication moieties. A. Soares, M. Lee, N. Hendrickson, B.A. Swan, C. Cornelius

8:00. Spray delivery of supramolecular polymer biomaterials. L. DiMartino, P. Jankoski, T. Clemons

8:00. Unraveling the impact of aging on high molecular weight Diels-Alder polyphenylene. N. Hendrickson, M. Lee, A. Soares, C. Cornelius

8:00. Electropolymerized organic mixed ionic-electronic conductors. A. Besic, C.G. Bischak

8:00. Designing additives to control the shear strength of a polyacrylate adhesive. C.D. Potter, J.E. Patterson

8:00. Advancing cartilage repair: A biomimetic approach with guar gum, chitosan, and polyether ether ketone based scaffold. M.H. Nawaz, A. Aizaz, M. Ismat, M. Abdullah, A. Ropari, M. Ur Rehman

8:00. Designing a synthetic signalling pathway using Hyrogelsfd. C. Valentine

8:00. Microfluidic self-assembly of colorimetric PDA liposome sensors using flow rate manipulation. C. Razanauskas, A.C. Chadwick, T.W. Hanks


8:00. Elucidation of the effect of polymer architecture on targeting ligand presentation in nucleic acid delivery vehicles. A. Radka, E. Stacy, P. Jankoski, T. Clemons

8:00. Exploring a means to improve the processability of high $T_g$ imine-benzoxazine vitrimers. J.D. Arrington, E. Booker, J. Peyrefitte, L.J. Hamernik, J.S. Wiggins
8:00. Characterization of bioluminescent silk micro/nanoparticles. **K. Lynch**, M. Berg, A. Murphy

8:00. Progress in the development of modular glycopolymers tailored to inhibit norovirus infections. **S.S. Newman**, J. Mase, R. Bianculli, M.D. Schulz

8:00. Surface modification of silk fibroin for electrostatic binding with metal nanostructures. **M. Kerns**, A. Guo, J. Talusig, W. Wee, Y. Bao, A. Murphy

8:00. Composite materials made from silk and gold nanoparticles for photothermal applications. **M. Stucky**, R. Frevol, A. Talbott, Y. Bao, A. Murphy

8:00. Fluorescent silk microparticles containing semiconducting polymer nanoparticles. **C. Doherty**, M. Berg, A. Murphy


8:00. Altering the microstructure of a proton exchange membrane via manipulating its ion exchange capacity through polymer blending. **A. White**, T. Senathiraja, C. Cornelius

8:00. Examination of mechanical and thermal degradation properties of polylactic acid embedded with lignin–cellulose nanocrystals chars. **T.R. Brown**, J. Beatty, T. Bristol

8:00. 3D printed porous tantalum oxide Scafold for orthopedic implants. **M. Mudassir**, A. Akhter, K. Bibi, S. Batool, M. Ur Rehman

8:00. Generating tough double network microgels by an emulsification method to make a biomedical adhesive. **Q. Tufino**, A. Smith

8:00. Tuning the spatial arrangement of solid-state sol-gel-based polymer electrolyte membranes via thermal annealing. **Z. Tan**, T. Senathiraja, C. Cornelius

8:00. Identifying low-field NMR biomarkers to characterize collagen/fibrin hydrogel composition. **H. Sawhney**, V. Witherspoon, P.J. Basser

8:00. Investigation into carbon-conscious Poly(hydroxy)urethane foam with phase change materials for thermal energy storage applications. **C. Lucci**, M. Lee, S. Dahlhauser, N. Rorrer, R.D. Allen

8:00. Development of a crosslinked zwitterionic-based hydrogel as a vitreous substitute with anti-fouling properties. **A. Laradji**

8:00. Applying group interaction modelling: Quantitative connection between polymer structure and properties. **K. Wang**, G. Van Assche
8:00. Development and design of porous organic polymers for enhancing their capability for selectively carbon dioxide capture. **M.M. Abdelnaby**, O.C. Al Hamouz

8:00. Electrospinning of polycarbodiimide fibers from pyridine and dichloroethane stocks. **O.V. Kulikov**, S. Perananthan, B.M. Novak

8:00. Design and validation of a co-polymerizable MMP inhibitor for dental adhesive applications. **M. Logan**, L.A. Miller, F. Sandes De Lucena, C.S. Pfeifer

8:00. Hemal loaded mesoporous bioactive glass nanoparticles reinforced alginate based coaxial nanofibers for drug deliver applications. **H. Nadeem**, M. Zeeshan, M. Hasan, M. Ur Rehman, S. Batool

**TUESDAY MORNING**
New Orleans Marriott
Galerie 1

**Cooperative Research Award**
*Symposium in Honor of Frank S. Bates, Ha Pham, Hung-Jue Sue, and Nikhil Verghese*

Financially sponsored by the Eastman Chemical Company

H. S. Creel, L. Sun, *Organizers, Presiding*

8:00 Introductory Remarks.

8:15. Toughened epoxy resins: An enabling technology for low-emission energy storage. **Y.I. Liang**

8:45. **Award Address** (ACS Award in Applied Polymer Science sponsored by the Eastman Chemical Company). Toughening plastics with poly(ethylene oxide)-b-poly(butylene oxide) diblock copolymer. **F.S. Bates**, M. Larsson, J. Coote, C.J. Ellison

9:15 Intermission.


10:00. Advancing reliability of highly filled silicone thermal interface materials for electric vehicles and automotive power systems. **K. Schansberg**, G. Kuhl, M. Guevara, C. Ciutara, N. Riem, **K.L. White**

TUESDAY MORNING
New Orleans Marriott
Galerie 5

Department of Defense Symposium on Excellence in Polymeric Materials Science and Engineering
Advances and Opportunities in Thin Film Electronics

Financially supported by UES Inc

K. Caster, R. Lambeth, M. Laskoski, D. Nepal, Organizers, Presiding

8:00 Introductory Remarks.

8:05. Soft hybrid materials for flexible, stretchable, patternable electronics. T.J. Marks

8:30. Liquid phase electron microscopy for hydrogel structure elucidation and property prediction. N.C. Gianneschi, N.D. Rosenmann

8:55. Engineering strength, adhesion, and electrical conductivity in semiconducting polymers for defense applications. D.J. Lipomi


9:45 Intermission.

10:00. Recent advances in materials chemistry on cage-like Silsesquioxanes. A. Lee, R.E. Maleczka

10:25. Acyclic diene metathesis polymerization. K.B. Wagener

10:50. C-H functionalization of polyolefins as a route to access advanced materials. F.A. Leibfarth

11:15. Skin-inspired electronics for robotics and bioelectronics. Z. Bao
TUESDAY MORNING
New Orleans Marriott
Galerie 4

Machine Learning, Data, and Automation for Polymer Discovery

Financially supported by Chemspeed Technologies, Inc

C. W. Coley, H. Tran, J. Xu, Organizers, Presiding

8:00 Introductory Remarks.

8:05. Synthesis and analysis of diverse polymer libraries. C.J. Hawker, C.M. Bates, E. Murphy, J. Chen, S. Skala

8:40. Closed-loop transfer provides chemical knowledge of photostable light-harvesting molecules. C. Schroeder

9:15 Intermission.


10:40. Automation and active learning for the autonomous design of polymer biomaterials. A. Gormley

11:15 Concluding Remarks.
TUESDAY MORNING
New Orleans Marriott
Regent

PMSE Centennial: Celebration of Success and New Frontiers in Polymeric Materials
Science and Engineering
Biomaterials & Sustainability

Financially supported by National Science Foundation; ExxonMobil; RSC Journals (Polymer
Chemistry, RSC Applied Polymers, RSC Advances, RSC Applied Polymers); Gelest; University
of Houston, Department of Chemical & Biomolecular Engineering; Tosoh Bioscience; Notre
Dame Energy & Notre Dame Materials Science & Engineering Program; TA Instruments -
Waters; Chemglass Life Sciences; University of Florida

M. Grunlan, L. Korley, Q. Lin, C. Soles, Organizers
S. Alexander, Presiding

8:00. Responsive polymer drug conjugates. H.D. Maynard

8:25. Emerging biomaterial strategies for addressing challenging unmet medical needs. M.
Becker

8:50. Decoding repetitive proteins to build functional biomaterials. D.J. Mai

9:15. Strategic biomimicry in polymeric biomaterial design. E. Cosgriff-Hernandez

9:40 Intermission.

10:00. Sustainability - enhancing circularity of polymers through advanced recycling. T.H. Epps

10:25. Physical properties of polymers under thickness confinement at the nanoscale. P.F.
Green


TUESDAY MORNING
New Orleans Marriott
Galerie 3

Advances in Polymer Materials for Biotechnology

Financially supported by Syensqo

N. Kelley-Loughnane, Organizer
K. Crawford, D. Simone, Organizers, Presiding

8:00 Introductory Remarks.

8:02. Genetically-targeted polymer assemblies for bioelectronic interfaces. Z. Bao

9:02. Photoenzymatic catalysis - using light to reveal new enzyme functions. T. Hyster

9:32. Enzyme-mimetic catalysts based on assembly of sequence-defined polymers into crystalline nanomaterials. C. Chen


10:12 Intermission.


10:58. Enhancement of Schwann cell migration using peptide-functionalized aligned nanofiber conduits for peripheral nerve reconstruction. Y. Chan, Y. Hu, N.G. Judge, N. Li, R.K. Willits, M. Becker


11:58 Concluding Remarks.
TUESDAY MORNING
New Orleans Marriott
Galerie 6

Functional Conjugated Polymers: Design, Synthesis, Characterization, and Emerging Applications
Emerging Structures and Topology

D. Baran, X. Gu, L. Kayser, Organizers
L. Fang, Organizer, Presiding
G. S. Collier, Presiding

8:00. Two-dimensional conjugated polymers: From dream to reality. X. Feng


9:20. Polyaniline-inspired conductive ladder polymers. L. Fang

9:45 Intermission.

10:10. Synthesis of a helical spring-like conjugated polymer. Z. Bao

10:35. Design, synthesis, and characterization of functional 1,4-dihydropyrrolo[3,2-b]pyrroles. G.S. Collier

10:50. Lone-pair-π conjugation in functional polymers: Conjugation mechanism, disorder resilience, and applications in polymer electrode materials. P. de Silva

11:05. Nanoscale tracking of carriers in single conjugated polymer chains. J.D. McNeill

11:20. Stacking of heterocycles to control conjugated oligomer packing and luminescence. S.W. Thomas

11:35. Establishing self-dopant design principles from structure-function relationships in self-N-doped perylene diimide organic semiconductors. L.L. Whittaker-Brooks
Kathryn C. Hach Award for Entrepreneurial Success
Symposium in Honor of Cato Thomas Laurencin

Cosponsored by POLY

Financially supported by Kathryn C. Hach Fund

E. Cosgriff-Hernandez, T. H. Epps, Organizers, Presiding

8:00. Periarticular and intraarticular approaches to managing osteoarthritic pain. L. Nair

8:30. Translating new drug and gene delivery technologies. J. Hanes

9:00. Regenerative biomaterials and medical devices. G. Ameer

9:30. Design considerations in the development of ECM models. H.H. Lu


10:30. Polymeric bioactives: Biobased polymers from bioactives and as bioactives. K.E. Uhrich

11:00. 3D printable biomaterials for tissue engineering. A. Mikos

11:30. Award Address (Kathryn C. Hach Award for Entrepreneurial Success supported by an endowed fund established by Kathryn C. Hach). Regenerative engineering: The Cato T. Laurencin Institute, and entrepreneurial success. C.T. Laurencin

TUESDAY MORNING
New Orleans Marriott
Mardi Gras Ballroom Salon A

Polymeric Materials for Sustainability
Carbon Neutral/Negative Polymer Technologies for Energy and the Environment

A. Baumann, Organizer
L. Flagg, H. Oh, Y. Rao, Organizers, Presiding
C. M. Stafford, Presiding

8:00. Membrane technologies are key enablers of the energy transition. R.P. Lively
8:30. Functional polymeric materials via dynamic covalent synthesis for environmental and energy applications. **W. Zhang**

9:00. Using active ester click chemistry to investigate CO$_2$ facilitated transport in polymer membranes. **J. Moon**, R. Johnson, K. El Hajj Sleiman, Z. Reddecliff

9:30 Intermission.

10:00. Kinetic study of direct air CO$_2$ capture using hybrid aqueous amino acid polymer system. **Z. Zhu**, U.I. Premadasa, J. Damron, D. Stamberga, N. Oldham, B. Doughty, N. Kumar, V. Bryantsev, V. Bocharova

10:30. Polymer-regulated electrochemical reduction of CO$_2$ on AG. A. Guo, A. Baumann, E. Rus, C.M. Stafford, **D. Raciti**

11:00. Understanding the critical role of anions in polymeric ion exchange resin for moisture-swing CO$_2$ capture. **Y. Zhu**, A. Booth, K. Hatzell

11:30. Using carbon sequestering microorganisms to form strong biodegradable plastics. H. Iyer, P. Grandgeorge, I. Campbell, M. Parker, T. Liao, **E. Roumeli**

**TUESDAY MORNING**
Virtual Only
Virtual Session

**Synthesis, Processing, and Fabrication of Polymeric Materials**

C. Urdaneta Thomas, **Organizer**
M. Rabnawaz, **Presiding**

10:00. Adaptive liquid crystal elastomer materials enabled by dynamic covalent bonds. **H. Bisoyi**


10:45. Building back the properties of post-consumers plastics. **M. Rabnawaz**
Multiscale Nanocellulose-Based Materials for Sustainability
Sponsored by CELL, Cosponsored by PMSE and POLY

TUESDAY AFTERNOON
New Orleans Marriott
Studios 3 – 10

PMSE Centennial Poster Session for Graduate Students

Financially supported by National Science Foundation

A. Figg, B. Singhi, C. Thomas, R. Yang, Organizers

1:30 M1. Probing dynamics: Triggering changes in hydrogel-based synthetic extracellular matrices with light toward understanding lung injury and disease. S. Swedzinski, J. Graf, L. Pradhan, A.M. Kloxin


1:30 M5. Rationally designed all-organic polymer dielectrics for high temperature energy storage applications. P. Aklujkar, J. Hao, R. Gurnani, R. Ramprasad, Y. Cao, G. Sotzing

1:30 M6. Morphology controlled α-Fe2O3 /rGO nanocomposites as high-performance anode for Li-ion battery application. A. Kulkarni, V. Kumari, C. Kamaja, G. Singh, M. Katiyar

1:30 M7. PAA-MXene composite polymer free standing electrolyte for zinc-based flexible batteries. G. Singh, C. Kamaja, V. Kumari, A. Kulkarni, M. Katiyar

1:30 M8. Enhanced electrochemical performance and reinforcement of nanocomposite gel electrolytes through molecular dispersion of graphene oxide in polyacrylic acid. V. Kumari, G. Singh, C. Kamaja, M. Katiyar


1:30 M10. Development of conjugated ladder polymers through robust intrachain hydrogen bonding interactions. O. Miranda, C. Deverter, S. Shelton, Y. Liu, L. Fang


1:30 M15. Hydrolytic and oxidative degradation of polyurethane foams for trauma wound healing. N. Petryk, L. Saldanha, M. Monroe


1:30 M18. Modeling the effect of structural parameters on the deformation of conducting polymer actuator: Finite element model and electrochemical analysis. S. Kumar, A. Yu, M. Khandelwal


1:30 M20. Developing high-molar-mass polymerized non-fullerene acceptors for better chemical stability. X. Zhong, W. You


1:30 M24. Cyclization of linear ethylene brassylate. M. Ahmad, S.M. Grayson

1:30 M25. Electrophoretically deposited TiO₂-containing pectin smart and corrosion-resistant composite coatings. M. Domalanta, E. Caldona
1:30 M26. N-type conjugated polymer. V. VERMA


1:30 M29. Graft copolymer compatibilizers for the dispersion of 1,4-bis[phenylethynyl]benzene (DEB) into siloxane matrices for hydrogen uptake applications. R.K. McDonough, L.P. Ramos, K. Biegasiewicz, T. Long

1:30 M30. Polymeric copper chelator for long-term inhibition of breast cancer proliferation and lung metastasis. X. He

1:30 M31. Design of nanostructured conducting polymer and its composite for hydrogen sensing. P. Askar


1:30 M33. Development and optimization of autothermal vacuum moisture swing system (aVMS) for direct air capture of CO$_2$. M. Patil, M. Green, K. Lackner

1:30 M34. Application of vibration-assisted convective deposition for poly(3-hexylthiophene)-based organic field-effect transistors. M. Sun, E. Reichmanis, J.F. Gilchrist, R. Kim

1:30 M35. Surface modification of poly(vinylidene fluoride) Microfiltration membranes using polydopamine in combination with organic or inorganic hydrophilic agent to improve oil fouling resistance. M.M. Zagho, S. Shaikh, M.K. Hassan, S. Nazarenko

1:30 M36. Preparation of flexible epoxy foams derived from plant oil. M. Vonsul, A. Knight, M. Sabzi, L. Jiang, D.C. Webster

1:30 M37. Fabrication of nanostructured fuel cell membranes using liquid crystal based materials. R. Dong, C. Johnson, C.O. Osuji

1:30 M38. Synergistic copolymer blending informs efficient terpolymer design for high performance PDNA delivery. M.C. Leyden, F. Oviedo, R. Kumar, N. Le, T.M. Reineke

1:30 M40. Synthesis and characterization of polybenzoxazine networks from bio-sourced feedstocks. T. Schneider, J.S. Wiggins

1:30 M41. Synthesis and design of precision anionic exchange membranes. N.Z. Singleton, J.G. Kennemur

1:30 M42. Pyrolytic synthesis of highly conductive ladder type polyaniline. M. Hays, M. Leng, L. Fang

1:30 M43. Synergistic pentablock and poly(phenylene oxide) copolymer blends for proton exchange membranes. T. Senathiraja, B.A. Swan, A. White

1:30 M44. Methacrylation and dimethacrylation of epoxidized hempseed oil: synthesis and characterization. M. Odegaard, S. Kapatsila, D.C. Webster


1:30 M48. Comprehensive analysis of epoxy resin micro-composite inks for the improvement of processability and printability in direct ink writing. Z. Smith, R. Advincula

1:30 M49. Computational studies of the order-disorder transition in block-random copolymers. R. Kumar, H. Ashbaugh, J. Albert


1:30 M51. Synthesis and characterization of carboxylated Polymyrcene. T. Kharkongor Chengappa, K.A. Cavicchi

1:30 M52. Real-time rigidity tuning in recycled polyolefins through PME 3D printing. X. Miao, A. Boydston

1:30 M53. ZnO-SnO$_2$-containing fluoropolymer coatings for corrosion protection of mild steel. S. Tigno, M. Ali, E. Caldona

1:30 M54. PVDF-HFP/CeO$_2$/MoO$_2$ hybrid coatings for corrosion protection applications. S.A. Adeleke, E. Caldona
1:30 M55. Self-doping induced open-shell ladder-type di-aniline quinoidal structure. M. Leng, L. Fang


1:30 M59. Preparation and structural analysis of polymer-derived ceramic nanocomposites. V. Mullins, J.S. Wiggins

1:30 M60. Phytochemical screening of essential oil and evaluation of antimicrobial activity and antioxidant properties of plant essential oil-loaded biopolymer as a potential wound healing. T.M. Omoyeni, D. Kavaz

1:30 M61. Tailoring bio-based polyester UV-curable resins with tunable mechanical properties suitable for SLA 3D printing applications. S. Bokhari, J.M. Catchmark, S.C. Chmely

1:30 M62. Effect of polycation molecular weight on diffusion of linear and star polyacids within multilayer assemblies. P.P. Shah, A. Aliakseyeu, J.E. Brito, S.A. Sukhishvili

1:30 M63. Retraction behavior of stretchable polyacrylamide hydrogels. M. Hossain, S. Kundu

1:30 M64. Polymerization with non-solvents and salts influence the structure of hydrogels. N. Guillomaitre, X. Xu, J. Hwang, H.A. Stone, R.D. Priestley

1:30 M65. Topologically precise amphiphilic bottlebrush polymers. T. Oluwole, N.D. Ogbonna, M. Dearman, C. Amofa, J. Lawrence
TUESDAY AFTERNOON  
New Orleans Marriott  
Mardi Gras Ballroom Salon B

100 Years of Polymer Structures  
Active Materials for Thin Films and Interfaces

Financially supported by XiMo Hungary Kft

W. Brittain, S. Ludwigs, L. Sun, *Organizers*
J. Rühe, T. A. Seery, *Organizers, Presiding*

2:00 Introductory Remarks.

2:05. Adaptive structures through actuators responsive to heat, light of magnetic fields.  
*J. Rühe*

Y.R. Huang, G. Aktas Eken,  
*C.K. Ober*

*S. Yang*

*O. Prucker, J. Rühe*

3:45 Intermission.

4:00. Adaptive mixed conducting polymer films for switchable devices.  
*S. Ludwigs*

4:25. Impact of an electrical potential on the assembly of polymer grafted nanoparticles (PGNP)  
near an electrode surface via neutron reflectivity.  
M.A. Haque, T. Feric, S. Hamilton, A. Park,  
*M.D. Dadmun*

4:50. Polymer network thin films from electrodeposition.  
*J. Werner*

5:15. Smart soft materials with multiscale architecture and dynamic surface topographies.  
S. Zeng, K. Shen, *L. Sun*
TUESDAY AFTERNOON
New Orleans Marriott
Galerie 5

Department of Defense Symposium on Excellence in Polymeric Materials Science and Engineering
Advances and Opportunities in Multifunctional Composites

Financially supported by UES Inc

K. Caster, R. Lambeth, M. Laskoski, D. Nepal, Organizers, Presiding

2:00 Introductory Remarks.

2:05. Unique approach to investigate thermal protection systems materials. J.H. Koo


2:55. Advanced chemistry and processing tools for polymer matrix composites. H. Koerner

3:20 Intermission.

3:35. Recent progress in the search for dynamically self-amplifying omniphoric multiscale metamaterials. N. Boechler

4:00. Adaptive epoxy resins: How do you design rapid response in a polymer glass or composite? J. Dennis

4:25. Using resin chemistry to improve high strain rate performance in glass fiber reinforced composites. B. Patterson, B. Knorr

4:45. Thermal conductivity of boron nitride nanotube fabric. J. Estevez
TUESDAY AFTERNOON
New Orleans Marriott
Regent

PMSE Centennial: Celebration of Success and New Frontiers in Polymeric Materials
Science and Engineering
Entrepreneurship & Smart Materials

Financially supported by National Science Foundation; ExxonMobil; RSC Journals (Polymer
Chemistry, RSC Applied Polymers, RSC Advances, RSC Applied Polymers); Gelest; University
of Houston, Department of Chemical & Biomolecular Engineering; Tosoh Bioscience; Notre
Dame Energy & Notre Dame Materials Science & Engineering Program; TA Instruments -
Waters; Chemglass Life Sciences; University of Florida

M. Grunlan, L. Korley, Q. Lin, C. Soles, Organizers
Q. Lin, Presiding

2:00. Fusion of organic polymer chemistry with scalable chemical processes: From scCO2 to r2r
particle molding to 3D printing. J.M. DeSimone

2:25. Innovation and entrepreneurship in polymer science in celebration of PSME’s 100th
anniversary. R.D. Priestley

2:50. Engineering interfaces for electronic applications: Reactive vapor phase inhibitors for area
selective depositions at tunable critical dimensions. R. Wojtecki

3:15. Designing, synthesizing and fabricating organic optical devices in display and
communication industries. S.Z. Cheng, F.W. Harris

3:40 Intermission.

4:00. Polymer semiconductors: From foldable displays to skin-inspired electronics. Z. Bao

4:25. Dynamic covalent chemistry and its role in smart materials. C. Bowman

4:50. Multiresponsive hydrogels as smart materials for actuator and sensor functions in
microfluidic application. B. Voit

5:15. Adaptive materials: Key building blocks for sense-assess-respond material feedback. P.
Buskohl, a. Juhl, R.A. Vaia
TUESDAY AFTERNOON
New Orleans Marriott
Galerie 1

2D Materials-Polymer Interfaces and Nanocomposites

B. Anasori, L. Beagle, M. Katiyar, J. Kennedy, A. Thakur, Organizers
A. Arabi Shamsabadi, M. Firouzjaei, Presiding

2:00 Introductory Remarks.

2:05. Computational Studies of Electrocatalytic HER and CO₂ Reduction using MXenes Materials. C. Liu

2:35. Preparation and characterization of lauric acid/ halloysite Nano composite using solvent method. C. Obele

2:50. Graphene electroanalytical chips: From In Vitro sensing to studying biological cells. A. Ebrahimi


3:35. Designing structured 2D materials by nanoscale wrinkling. T.W. Odom

4:05 Intermission.

4:15. Flatland quantum materials. C. Chakraborty

4:45. 2D organic materials: Towards wafer-scale and highly crystalline covalent organic frameworks (COFs). D. Bhagwandin

5:00. Biomimetic polymer nanocomposites for superior mechanical properties: Insights from molecular dynamics simulations. P.P. Singh, R. Ranganathan

5:15. Non-Intrusive skin-integrated wearables sensors. S. Kabiri Ameri

5:45. Enhancing anti-corrosion properties of Pani- via electrodeposited composite films with Go and PVK additives. K.Y. Patino Jaimes, R. Advincula, E. Kim
TUESDAY AFTERNOON
New Orleans Marriott
Galerie 3

Advances in Polymer Materials for Biotechnology

Financially supported by Syensqo

K. Crawford, Organizer
N. Kelley-Loughnane, D. Simone, Organizers, Presiding

2:00 Introductory Remarks.

2:02. Tunable intervalence charge transfer in Prussian Blue analogues enables stable and efficient biocompatible Artificial synapses. A. Talin

3:02. Automated discovery of single-chain polymer nanoparticles that mimic proteins. A. Gormley

3:32. Fatigue-resistant hydrogel optical fiber enables peripheral nerve optogenetics during locomotion. X. Liu, S. Rao, W. Chen, Y. Cheng

3:52. Polymeric bioactive filtration for HVAC systems. T.J. Kennedy, R.G. Dacey, R. Roth

4:12 Intermission.


5:18. Architecturally controlled swelling of soft and firm brush hydrogels. C.J. Wang, F. Vashahi, S. Sheyko

5:38. Proteomimetic polymer therapeutics. B. Gattis, N.C. Gianneschi

5:58 Concluding Remarks.
TUESDAY AFTERNOON
New Orleans Marriott
Galerie 6

Functional Conjugated Polymers: Design, Synthesis, Characterization, and Emerging Applications
Processing and Polymer/Device Physics

D. Baran, L. Fang, L. Kayser, Organizers
X. Gu, Organizer, Presiding
B. Collins, Presiding

2:00. Ionic conjugated polymers as a multifunctional interlayer for perovskite optoelectronic devices. H. Woo


3:20. Mapping local dopant concentration in organic mixed conductors upon chemical and electrochemical doping. C.G. Bischak

3:45 Intermission.

4:15. Enhancing and gating organic mixed ionic-electronic transport through local surface energy. B. Collins

4:40. Withdrawn

5:05. Modeling bulk heterojunction nanoparticles for water splitting. N. Clarke, G. Buxton


5:35. Stable and high performing n-type and ambipolar organic electrochemical transistor for next-generation bioelectronics. W. Leong
TUESDAY AFTERNOON
New Orleans Marriott
Galerie 4

Machine Learning, Data, and Automation for Polymer Discovery

Financially supported by Chemspeed Technologies, Inc

C. W. Coley, H. Tran, J. Xu, Organizers, Presiding

2:00 Introductory Remarks.

2:05. Automating the discovery of a catalytic system for the depolymerization of polystyrene. S. Lo, F. Strieth-Kalthoff, H. Tran, A. Aspuru-Guzik


3:05 Intermission.


3:40. High throughput virtual screening of monomers for frontal ring opening metathesis polymerization via combinatorial expansion of chemical space surrounding dicyclopentadiene. L. Chua, A. Singhal, J. Moore, R. Gomez Bombarelli

4:00. Evaluating and harnessing generative AI for the de novo design of high-conductivity solid polymer electrolytes: A performance comparison of various deep learning architectures. A. Khajeh, Z. Yang, W. Ye, X. Lei, D. Schweiggert, H. Kwon


4:40 Intermission.

4:55. Material acceleration platform for the design of polymer nanocomposites. M. Haranczyk

5:35. AI/ML directed polymer synthesis and 3D digital manufacturing. R.C. Advincula

5:55 Concluding Remarks.

TUESDAY AFTERNOON
New Orleans Marriott
Mardi Gras Ballroom Salon A

Polymeric Materials for Sustainability
Carbon Neutral/Negative Polymer Technologies for Energy and the Environment

A. Baumann, Organizer
L. Flagg, H. Oh, Y. Rao, Organizers, Presiding
C. M. Stafford, Presiding

2:00. Metal-free organic polymer batteries and polymer-air batteries toward circular energy storage. J.L. Lutkenhaus, T. Ma, A. Easley

2:30. Single ion conducting polymer blend electrolytes. W. Ioo, J. Wu, M. Gallmeyer

3:00. Reversible polymerization-depolymerization of organic cyclic esters for thermochemical energy storage. M. Veerabagu, M.S. Prabhudesai, P.V. Braun, S. Sinha

3:30 Intermission.

4:00. Probing the ion binding capabilities of synthetic polyzwitterions. C. Medina Jimenez, M.V. Tirrell

4:30. Withdrawn

5:00. Membranes for clean energy and sustainable environment. A. Roy

5:30. Selective extraction of lithium from brine via diffusion dialysis process using mixed matrix membrane. S. Pal, D. Jassby, E.M. Hoek
TUESDAY AFTERNOON
Virtual Only
Virtual Session

PMSE/POLY Poster Session

A. Figg, B. Singhi, C. Urdaneta Thomas, Organizers

12:00. Cost effective Ito (glass/PET) coated thin PDLC films using dimethyaminopropyleamine (DMAPA) hardener. M. Ellahi

12:00. Recent advances in wastewater purification using grafted thin film nanocomposite/PVDF membrane. A.A. Adamu Abdullahi, T.A. Saleh

12:00. Group 14 alkyl and Perfluoroalkylhalide radical activators for alkene photopolymerizations. A. Dutta, J. Kim, O. Adebolu, A. Dixit, A.D. Asandei

12:00. Synthesis and conformational relationships of high-performance n-type conjugated polymers based on novel highly electron-deficient building blocks. C. Zhang, Y. Zhang


12:00. Hemal loaded mesoporous bioactive glass nanoparticles reinforced alginate based coaxial nanofibers for drug deliver applications. H. Nadeem, M. Zeeshan, M. Hasan, M. Ur Rehman, S. Batool

12:00. Design of safer novel polymer nanocomposites involving ceria nanoparticles and non-PVC polymers for biomedical applications: A molecular dynamic simulation study. S.G. Shet, J. Carrillo, S. CHALLA, V. V.

12:00. Dispersing metal halide in zwitterionic COF for highly efficient ammonia storage and separation. Y. Fu, H. Ma

12:00. Preparation of PMMA-based temperature/pH responsive nanoparticles by seed photopolymerization under green LED irradiation. S. Yu, J. Xing


12:00. Liquid-liquid Interface assisted synthesis of conducting polymer-nanomaterial composites. M. Menamparambath, N. Puthiyottil

12:00. Advancing cartilage repair: A biomimetic approach with guar gum, chitosan, and polyether ether ketone based scaffold. M.H. Nawaz, A. Aizaz, M. Ismat, M. Abdullah, A. Ropari, M. Ur Rehman
12:00. 3D printed porous tantalum oxide Scaffold for orthopedic implants. **M. Mudassir**, A. Akhter, K. Bibi, S. Batool, M. Ur Rehman

12:00. Generating tough double network microgels by an emulsification method to make a biomedical adhesive. **Q. Tufino**, A. Smith

12:00. Doping to engineer carbon nanomaterials: Unveiling the versatility of carbon nanomaterials for Next-Generation material innovations. **K. Ahmad**

**Multiscale Nanocellulose-Based Materials for Sustainability**
**Sponsored by CELL, Cosponsored by PMSE and POLY**

**State of the Art in Protein-Based Engineered Materials**
**Protein-based Materials Engineering**
**Sponsored by CELL, Cosponsored by AGFD, COLL and PMSE**

**WEDNESDAY MORNING**
New Orleans Marriott
Galerie 1

**2D Materials-Polymer Interfaces and Nanocomposites**

B. Anasori, L. Beagle, M. Katiyar, J. Kennedy, A. Thakur, **Organizers**
H. Fang, C. Liu, **Presiding**

8:00 Introductory Remarks.

8:05. Non-Reflective EMI Shielding and Tunable Microwave Absorption by Tailored MXene Nanocomposite. **A. Yu**

8:35. Synthesis of magnesium oxide nanoparticles fabricated on a graphene oxide nanocomposite for CO2 sequestration at elevated temperatures. **C. Gunathilake**

8:50. Applications of Two-Dimensional Metal Carbides (MXenes)/polymer composites for the removal of emerging contaminants from water. **K.A. Mahmoud**


9:35 Intermission.

9:45. Self-healing, self-cleaning, and stretchable moisture-resistant gas barrier films with 2D polymer and inorganic nanoplatelets for flexible electronics packaging applications. **S. Mahmood, C. Kant, A. Khan, C. Chu, H. Lin, M. Katiyar**

10:30 Concluding Remarks.

**WEDNESDAY MORNING**
New Orleans Marriott
Mardi Gras Ballroom Salon B

100 Years of Polymer Structures
*Active Materials for Thin Films and Interfaces*

Financially supported by XiMo Hungary Kft

W. Brittain, J. Büche, T. A. Seery, *Organizers*
S. Ludwigs, L. Sun, *Organizers, Presiding*
O. Prucker, *Presiding*

8:00. Low-k and high-k dielectric polymers containing designed metal organic framework nanoparticles. **H. Sue, C. Liu**

8:25. Applications of synchrotron radiation X-ray scattering and spectroscopy to structure characterization of soft matter. **A. Takahara**

8:50. Molecular design of polarizable soft matter. **D.M. Barber, J.A. Lewis**


9:40 Intermission.

9:55. Smart multifunctional slide-ring materials. **K. Ito, S. Ando**


10:45. Reassessing chain tilt in the lamellar crystals of polyethylene by electron-diffraction imaging. **H. Jinnai**

11:10. Polymer composites with stimuli-responsive versatility. D. Ravichandran, **K. Song**
WEDNESDAY MORNING
New Orleans Marriott
Galerie 5

Fundamental Characterization and Properties of Polymers

C. Thomas, Organizer
K. Cerdan Gomez, S. Peterson, Presiding

8:00. High-throughput characterization of photopolymerizing hydrogels. K. Cerdan Gomez, J. Urueña, M.E. Helgeson, M. Valentine


8:30. Understanding additive degradation pathways and formation of Non-Intentionally Added Substances (NIAS) in polystyrene: Impact on chemical structure and thermo-mechanical properties. S. Perocheau-Arnaud, V. Michelet, S. Olivero, P. Navard, C. Combeaud, A. Mija


9:15. The complex characterization of poly(amino acids) in solution. M. Barz

9:30 Intermission.


10:00. Interphase mechanical behavior in poly(methyl methacrylate) - polyrotaxane blends using AFM-based nanoindentation. S. Peterson, G. Molero, Z. Zhu, H. Sue, P. Kolluru

10:15. Impact of backbone stereochemistry on the physical and biological properties of ROMP-based precision glycopolymers. M. Ishaq, C.E. Callmann

10:30. Understanding the impact of BHT stabilizer and solvent interactions on the microstructure of spun-cast nanoporous thin films of PMMA. S. Flagg, E. Peterson, B. Augustine

10:45. Conformation and dynamics of bottlebrush polymers. K. Bichler, B. Jakobi, G.J. Schneider

11:00. Influence of rigidity on bottlebrush dynamics. B. Jakobi, K. Bichler, G.J. Schneider
WEDNESDAY MORNING
New Orleans Marriott
Galerie 4

Machine Learning, Data, and Automation for Polymer Discovery

Financially supported by Chemspeed Technologies, Inc

C. W. Coley, H. Tran, J. Xu, Organizers, Presiding

8:00 Introductory Remarks.


8:40. Copolymer blending and machine learning informs efficient terpolymer design for high performance nucleic acid delivery. T.M. Reineke, M.C. Leyden


9:50 Intermission.


10:40. Predicting the glass transition of complex polymers via integration of machine learning, molecular modeling and experiments. W. Xia

11:15. Data-driven development of polymer microparticles. Z. Bao, P. Bannigan, A. Aspuru-Guzik, C. Allen

11:50 Concluding Remarks.
**WEDNESDAY MORNING**
New Orleans Marriott
Regent

**PMSE Centennial: Celebration of Success and New Frontiers in Polymeric Materials Science and Engineering**

*Materials Discovery & Energy*

Financially supported by National Science Foundation; ExxonMobil; RSC Journals (Polymer Chemistry, RSC Applied Polymers, RSC Advances, RSC Applied Polymers); Gelest; University of Houston, Department of Chemical & Biomolecular Engineering; Tosoh Bioscience; Notre Dame Energy & Notre Dame Materials Science & Engineering Program; TA Instruments - Waters; Chemglass Life Sciences; University of Florida

M. Grunlan, L. Korley, Q. Lin, C. Soles, Organizers
H. Kwon, Presiding

**8:00.** Computational design and discovery of polymeric materials: How did we get here, and where are we going?. **J.J. De Pablo**

**8:25.** Innovation in polymer science and engineering driven by molecular modeling, simulations, and machine learning. **A. Jayaraman**

**8:50.** AREST™ autonomous experimentation for accelerated research. **B. Maruyama**

**9:15.** The future of materials designers in polymer science. **B.D. Olsen**

**9:40** Intermission.

**10:00.** Macromolecular engineering of chromophores that harness and amplify light energy. **L.M. Campos**

**10:25.** Organic polymer batteries: Past, present, and future. **J.L. Lutkenhaus**

**10:50.** Ion transport and performance analysis in polymer composite electrolytes. **X.C. Chen**

**11:15.** Single-ion conducting polymer electrolytes for rechargeable batteries. **J.L. Schaefer**
WEDNESDAY MORNING
New Orleans Marriott
Galerie 6

Synthesis, Processing, and Fabrication of Polymeric Materials

C. Urdaneta Thomas, Organizer
N. J. Conte, A. Nason, Presiding

8:00. Multimode sono-fabrication: An advanced approach for synthesis and printing of tough hydrogels. Y. CHENG, S. Lee, L. Bourdages, J. Provost, J. Li

8:15. Zwitterionic aromatic polyamide brushes as durable antifouling surfaces. N.J. Conte, S. Boyes

8:30. Withdrawn

8:45. Soybean extract as green additive to fluoropolymer coating for enhanced surface adhesion and corrosion protection. M. Domalanta, E. Delas Armas, S. Ferdousi, Y. Jiang, E. Caldona

9:00. Durable TiO$_2$/PVDF-HFP nanocomposite corrosion-resistant coatings for mild steel. S.A. Adeleke, E. Caldona

9:15. Polymer brushes at the nanoscale: Synthesis, characterizations, and applications of mixed Rod-coil nanopatterned systems. Y.R. Huang, G. AKTAS EKEN, C.K. Ober

9:30 Intermission.

9:45. Scaling-up the cationic polymerization of poly(phthalaldehyde) via continuous flow synthesis. A.C. Engler, J.M. Schwartz, P.A. Kohl

10:00. Chemical recycling of polybutadiene rubber with tunable thermal depolymerization enabled by microencapsulated metathesis catalysts. M. Warner, M. Romero, B. Jones


10:30. Mechanochemical upcycling of polystyrene into value-added products. M. Wang


11:15. Sequential dehydrochlorination-hydrogenation cycles on PVC towards tailorable depolymerization products. A. Alshaikh, J.E. Bara

WEDNESDAY MORNING
New Orleans Marriott
Galerie 3

Advances in Polymer Materials for Biotechnology

Financially supported by Syensqo

D. Simone, Organizer
K. Crawford, N. Kelley-Loughnane, Organizers, Presiding

8:00 Introductory Remarks.

8:02. Synthetic mucus gels for biotechnological applications. A.B. Braunschweig


10:12 Intermission.


11:18. HPG-PPG-HPG copolymer: A new polymer exhibiting unique properties. C. Zhao

11:38. Self-boosting mRNA vaccine delivery using a novel dissolvable needle. J. Han, L. Zhang, R. Langer, A. Jaklenec

11:58 Concluding Remarks.
WEDNESDAY MORNING
New Orleans Marriott
Mardi Gras Ballroom Salon A

Polymers for a Circular Economy
System Perspective

S. Avraamidou, A. Carpenter, A. Yvon-Bessette, Organizers, Presiding

8:00 Introductory Remarks.

8:05. Systems perspective for implementing the circular economy for polymers. B. Bakshi, K. Peretti, E. Nuñez

9:05 Discussion.

9:20 Intermission.


9:50. Upcycling plastic wastes to value-added chemicals via electrified spatiotemporal heating. Q. Dong

10:10. Standards to support a circular economy for textiles. A. Forster

10:30. Plastics redesign for biorenewable circularity. B. Helms

10:50 Intermission.

11:00. Nylon 6 Deconstruction and upcycling: From waste to a new place. J. Zheng, M. Boucher, T. Saito, J. Foster, M. Arifuzzaman


WEDNESDAY MORNING
New Orleans Marriott
Studio 3 – 10

PMSE/POLY Poster Session

A. Figg, B. Singhi, C. Urdaneta Thomas, Organizers

10:30 M54. Development of a crosslinked zwitterionic-based hydrogel as a vitreous substitute with anti-fouling properties. A. Laradji

10:30 M55. Rapamycin induction increases the Cutinase gene expression and secretion via the mTOR pathway in Papiliorema laurentii. S.M. Zelik, B. Stamps, V. Roman, N. Kelley-Loughnane

10:30 M56. Development and design of porous organic polymers for enhancing their capability for selectively carbon dioxide capture. M.M. Abdelnaby, O.C. Al Hamouz

10:30 M57. Electrospinning of polycarbodiimide fibers from pyridine and dichloroethane stocks. O.V. Kulikov, S. Perananthan, B.M. Novak


10:30 M59. Applying group interaction modelling: Quantitative connection between polymer structure and properties. K. Wang, G. Van Assche

10:30 M60. Two component dynamic cross-linking polymer coatings for military applications. N. Weise, D. Fragiadakis, D. Fabrizio, B.T. Rasley, C. Murphy, J. Lundin

10:30 M61. Characterization of wool fibers from arctic animals: Biotech solutions for keratin-infused textiles. V. Roman, A. Braddock, B. Stamps, N. Kelley-Loughnane


10:30 M64. Porous carbon-based particles and their polyethyleneimine modified forms as adsorbents in the development of CO2 capture technologies. B. Ari, A.K. Sunol, N. Sahiner


State of the Art in Protein-Based Engineered Materials
Protein Waste Revalorisation for Sustainable Materials
Sponsored by CELL, Cosponsored by AGFD, COLL and PMSE

WEDNESDAY LUNCH HOUR
New Orleans Marriott
Galerie 2

12:00 – 2:00 PMSE Panel Discussion: Partnership and Opportunities in the Next Frontier of Polymeric Materials for Defense

Panelists: Francesca Iacopi, University of Technology, Sydney; Joe Lenhart, DEVOM, Army Research Laboratory; Seth Marder, University of Colorado; Holly Thomas, Boeing Research and Technology; Richard Vaia, Air Force Research Laboratory; and David Walters, PPD Industries, Inc. Boxed lunches provided while available.

WEDNESDAY AFTERNOON
New Orleans Marriott
Studios 3 - 10

PMSE Centennial Poster Session for Early Career Researchers in Academia, Industry, and National Labs

A. Figg, B. Singhi, C. Thomas, R. Yang, Organizers


1:30 M3. Design and synthesis towards defect-free, rigid, thermodynamically driven Benzobisimidazole (BBI) ladder polymer. V.N. Shinde

1:30 M4. Thermally stable ceramics derived from crosslinked borate containing pre-ceramic polymers. C. Curtis, C. Corbin


1:30 M12. Utilizing nature tropism of a novel nanomaterial towards cancer stem cells. G. Xiong, A. Schatzlein, I.F. Uchegbu


1:30 M14. Compatibilization of poly(L-lactic acid) and poly(δ-valerolactone) for tough, thermally-robust, and compostable packaging technologies. A. Baer, R. Clarke, K. Knauer, R. Ramegowda

1:30 M15. Solvent-dependent sorption of recycling contaminant surrogates in polypropylene food contact materials. Y.S. Song, H. Wang, S. Senthilkumaran, J.L. Koontz


1:30 M17. Low friction fabric finishes eliminate microplastic fiber release. S. Lahiri

1:30 M18. Polyethyleneimine-based super porous cryogel composites as carbon dioxide capture systems. S. Demirci, V. Bhethanabotla, N. Sahiner

1:30 M19. Toughening brittle biological P3HB with synthetic polyesters. Z. Zhang, E.Y. Chen

WEDNESDAY AFTERNOON
New Orleans Marriott
Studios 3 – 10

PMSE Centennial Poster Session for Undergraduate Students

Financially supported by National Science Foundation

A. Figg, B. Singhi, C. Thomas, R. Yang, Organizers


1:30 M22. Controlling material degradability through sterochemistry. A.G. Loar, B. Baez, S. Brucks


1:30 M25. Linear-dendritic hybrid polymer via Williamson ether synthesis. A. Huskey, A. Miles, S.M. Grayson


1:30 M27. Altering the microstructure of a proton exchange membrane via manipulating its ion exchange capacity through polymer blending. A. White, T. Senathiraja, C. Cornelius

1:30 M28. Elucidation of the effect of polymer architecture on targeting ligand presentation in nucleic acid delivery vehicles. A. Radka, E. Stacy, P. Jankoski, T. Clemons


1:30 M31. Designing robust microgels: A double network approach. C.V. O’Dell, A. Smith
1:30 M32. Fluorescent silk microparticles containing semiconducting polymer nanoparticles. C. Doherty, M. Berg, A. Murphy

1:30 M33. Designing additives to control the shear strength of a polyacrylate adhesive. C.D. Potter, J.E. Patterson

1:30 M34. Covalent modification of keratin proteins for novel biomaterial applications. C. Dalton, T. Clemons, E. Stacy

1:30 M35. Microfluidic self-assembly of colorimetric PDA liposome sensors using flow rate manipulation. C. Razanauskas, A.C. Chadwick, T.W. Hanks

1:30 M36. Designing a synthetic signalling pathway using Hyrogelsfd. C. Valentine


1:30 M40. Regio-regularity effects on mixed conduction in a glycolated polythiophene. E.J. Kelly, D. Meli, J. Tropp, J. Rivnay

1:30 M42. Characterization of evolving carbon structures from Bis-ortho-diynylarene (BODA)-derived polynaphthalene networks via non-isothermal TGA kinetics and pyro-GCMS. J.M. Brown, P.A. Madden, E. Borrego, D.W. Smith

1:30 M43. Aggregation Behavior of Current Doped Poly(3-hexylthiophene). E. Gibson, S. Mo, N. Kreis, S. Guo

1:30 M44. Identifying low-field NMR biomarkers to characterize collagen/fibrin hydrogel composition. H. Sawhney, V. Witherspoon, P.J. Basser

1:30 M45. Synthesis and formulation of high performance benzoxazine and epoxy composite blends for additive manufacturing applications. J. Leuciuc, A. King, S. Andreou, R. Advincula

1:30 M46. Enhancing the mechanical properties of poly(styrene-butadiene-styrene) with layered double hydroxide nanoparticles through varied coating techniques. J.D. Pulla, K. Shen, L. Sun

1:30 M47. Exploring a means to improve the processability of high $T_g$ imine-benzoxazine vitrimers. J.D. Arrington, E. Booker, J. Peyrefitte, L.J. Hamernik, J.S. Wiggins

1:30 M49. Interfacial engineering of particles and surfaced for activation and bonding to benzoxazine based polymers. K. Hekker, D.A. Rider

1:30 M50. Effect of angle on flow dynamics of wax on plastic microfluidic devices. K. Sanders, A. Qamar


1:30 M52. Synthesis of biodegradable polymers from furan-protected maleimide compounds. D.Y. Son, K. Nguyen, R. Alkhazalah

1:30 M54. Determining the kinetics of sulfonate dopants in organic mixed conductors. K.S. Forthman, C.G. Bischak

1:30 M55. Spray delivery of supramolecular polymer biomaterials. L. DiMartino, P. Jankoski, T. Clemons

1:30 M56. Surface modification of silk fibroin for electrostatic binding with metal nanostructures. M. Kerns, A. Guo, J. Talusig, W. Wee, Y. Bao, A. Murphy


1:30 M59. Composite materials made from silk and gold nanoparticles for photothermal applications. M. Stucky, R. Frevol, A. Talbott, Y. Bao, A. Murphy

1:30 M60. Unraveling the impact of aging on high molecular weight Diels-Alder polyphenylene. N. Hendrickson, M. Lee, A. Soares, C. Cornelius


1:30 M63. Progress in the development of modular glycopolymers tailored to inhibit norovirus infections. S.S. Newman, J. Mase, R. Bianculli, M.D. Schulz

1:30 M64. Examination of mechanical and thermal degradation properties of polylactic acid embedded with lignin–cellulose nanocrystals chars. T.R. Brown, J. Beatty, T. Bristol

1:30 M65. Tuning the spatial arrangement of solid-state sol-gel-based polymer electrolyte membranes via thermal annealing. Z. Tan, T. Senathiraja, C. Cornelius
WEDNESDAY AFTERNOON
New Orleans Marriott
Mardi Gras Ballroom Salon B

100 Years of Polymer Structures
Active Materials for Thin Films and Interfaces

Financially supported by XiMo Hungary Kft

W. Brittain, S. Ludwigs, J. Rühe, T. A. Seery, L. Sun, Organizers
K. Shen, K. Song, J. Werner, Presiding

2:00. Nexus of grafted conjugated polymers and polymer brushes. R.C. Advincula

2:25. Balancing electronic and ionic transport in polymers: From dry to hydrated systems. S. Patel


3:40 Intermission.


4:45. Protein-polymer bioconjugation via photoinduced RAFT polymerization using porphyrinic metal-organic frameworks. Y. Huang, Z. Luo

WEDNESDAY AFTERNOON
New Orleans Marriott
Regent

Fundamental Characterization and Properties of Polymers

C. Thomas, Organizer
E. Stephanie, S. Tigno, Presiding

2:00. Corrosion resistant fluoropolymer composite coatings containing organo-functionalized clay particles. S. Tigno, M. Ali, E. Caldona
2:15. Fundamental factors that impact the glass transition temperatures of bottlebrush polymers. **M. Dearman**, N.D. Ogbonna, C. Amofa, T. Oluwole, A. Peters, J. Lawrence

2:30. Untangling chemistry and performance properties at epoxy-pressure sensitive adhesive interfaces. **E. Ma**

2:45. Mechanically robust, hierarchically self-assembled materials from cellulose nanocrystals covalently interlocked with liquid crystal grafted polyacrylates. **P. Njenga**, D. Ndaya, F.K. Masese, R. Kasi


3:30 Intermission.


5:00. Characterizing quaternary ammonium polystyrene polymers for structure, property, and performance relationships in direct air capture applications. **E.M. Benard**, M. Green, M.A. Velazco, K. Niimoto
WEDNESDAY AFTERNOON
New Orleans Marriott
Galerie 1

Novel Applications of Polymeric Materials

C. Thomas, Organizer
K. Rajagopalan, C. Westover, Presiding

2:00. Rubbery organic frameworks- ROF toward ultra permeable CO$_2$ selective soft adaptive membranes. M. Barboiu

2:15. Hybrid polymer Salogels as reversible matrices for shape stabilization of a chloride salt hydrate thermal energy storage material. K. Rajagopalan, S. Haney, P. Shamberger, S.A. Sukhishvili

2:30. Core-shell nanospheres of silica@ZnO enriched polyurethane coating for sustainable marine transport. J. Verma


3:00. Multifunctional heteroatom doped g-C$_3$N$_4$ embedded HA-Gd(III) and HA-Fe(III) particles as targetable theragnostic. S. Sagbas, M. Sahiner, E. Umut, N. Sahiner

3:15. Hydrogels equipped with smart skins: Switching on/off the release of solutes. M. Nader, N. Sai Subraveti, S.R. Raghavan

3:30 Intermission.


4:00. Mycelia enable customizable living ablative coatings. A. Gryganskyi, V. Roman, P. Dennis, N. Kelley-Loughnane, B. Stamps


4:30. Targeted separation scheme of polyurethane depolymerization products. T.B. Telenar, T. Long, M. Green
4:45. Bis (2-hydroxyethyl) terephthalate as a comonomer to enable polyurethane depolymerization. C. Westover, T. Long

5:00. Glassy and ductile thermosets as a recyclable and energy-saving alternative to semicrystalline thermoplastics. C. Wang, C.J. Reese


WEDNESDAY AFTERNOON
New Orleans Marriott
Galerie 5

Synthesis, Processing, and Fabrication of Polymeric Materials

C. Urdaneta Thomas, Organizer
B. Rogers, J. D. Smith, Presiding

2:00. Precision synthesis of bis(2,2,6,6-tetramethyl-4-piperidinyl methacrylate) disulfide and its application in covalent adaptable networks made by free-radical polymerization. T. Debsharma, J.M. Torkelson


2:45. Unreacted amine groups: Indispensable keys to unlock imine bonds in dynamic networks. M. Martins, P. Carden, G. Toleutay, S. Ge, B. Li, A.P. Sokolov

3:00. Effect of additives on deformation rate-adaptive conducting polymers. D. Wu, Y. Wang

3:15. The behavior of DQ-gelatin in a swelling polymeric system. B. Rogers, I. Moore, C. Tyson, J. Dumas

3:30. Withdrawn

3:45 Intermission.

4:00. Sustainable polyesters: Combining bio-based resources with function integration. B. Voit, C. Mielke, D. Pospiech

4:15. Preparation, structure, and properties of stimuli-responsive and conductive cellulosic gels. F.K. Masese

4:45. Organocatalysis for green synthesis of tunable polyester photopolymers. A.C. Weems

5:00. Morphology, surface properties and mechanical behavior of poly(ethylene-co-vinyltriethoxysilane) grafted to model silica surfaces. J.D. Smith, J.W. Brandt, P. Brant, B.P. Carrow, M.L. Robertson, A. Karim

5:15. Leveraging DNA intercalation to tune bulk properties of supramolecular hydrogels. S.M. Hughes, A. Aykanat, N. Pierini, W. Paiva, A. Edwards, A. Weeks, O. Durant, N. Oldenhuis


WEDNESDAY AFTERNOON
New Orleans Marriott
Galerie 3

Advances in Polymer Materials for Biotechnology

Financially supported by Syensqo

N. Kelley-Loughnane, Organizer
K. Crawford, D. Simone, Organizers, Presiding

2:00 Introductory Remarks.

2:02. Chiral induced spin selectivity and its implications for electrocatalysis and electrochemical reactions. D.H. Waldeck

3:02. Modeling of specific and non-specific therapeutics with large multivalent architectures. P. Kral


4:12 Intermission.

4:28. Making oligonucleotide better medicines with bottlebrush polymers. K. Zhang


5:58 Concluding Remarks.

**WEDNESDAY AFTERNOON**
New Orleans Marriott
Galerie 4

**Novel Applications of Polymeric Materials**

C. Thomas, **Organizer**
Z. Smith, C. P. Ward, **Presiding**

2:00. Investigation of infrared light assisted curing of epoxy resin composite inks for direct ink writing applications. **Z. Smith**, R. Advincula


3:15. Precision glycopolymers for capture and release of divalent cations. **S. Jeon**, T. Haynie, C.E. Callmann


3:45 Intermission.

4:15. Thiol-ene reactions for the synthesis of block-random copolymers. R. Gadimli, J. Albert

4:30. Melt-mixed thermoplastic polymer composites for harvesting waste heat using the thermoelectric effect. P. Poetschke, B. Krause


5:00. Embracing industry academia partnerships will solve the plastic pollution crisis faster. C.P. Ward, B. Edwards, S.T. Perri, C. Reddy

5:15. Withdrawn

5:30. Elevating the value of commodity plastics through tailored vitrimer chemistry. M. Rahman, T. Saito


WEDNESDAY AFTERNOON
New Orleans Marriott
Mardi Gras Ballroom Salon A

Polymers for a Circular Economy
Technology Perspective

S. Avraamidou, A. Carpenter, A. Yvon-Bessette, Organizers, Presiding

2:00 Introductory Remarks.

2:05. Technology perspective for implementing the circular economy for polymers. K. Knauer, R. Van Lehn, R.A. Auras

2:50 Discussion.

3:00 Intermission.

3:10. Textiles circularity through designer molecules. C. Wentz, A. Forster


4:30 Intermission.


5:00. Chemical recycling of waste polyolefins into chemically recyclable materials. K. Liu, G. Miyake


WEDNESDAY AFTERNOON
New Orleans Marriott
Galerie 6

Synthesis, Processing, and Fabrication of Polymeric Materials

C. Urdaneta Thomas, Organizer
A. Pathan, J. Runge, Presiding

2:00. Traceless crosslinking in polyisobutylene (PIB) materials. A. Pathan, J.M. Eagan

2:15. Mapping the drug-loading design space of long-acting cross-linked microparticles. J.R. Bulton, C. Allen

2:30. Guanidine based polymeric sorbents for the direct air capture of CO₂. M. Modayil Korah, M. Green

2:45. Withdrawn

3:00. Withdrawn

3:15. Withdrawn

3:45 Intermission.

4:00. Sugar-based polymers for renewable, degradable, and efficient battery electrolytes. J. Runge, F. Marken, A. Buchard

4:15. Withdrawn

4:30. Understanding structure-activity relationships of cyclic acetals to tune polymer degradation. J.A. McLaughlin, G.R. Palmese


5:00. Comprehensive dynamics in polyelectrolyte coacervates. J.B. Schlenoff, K. Akkaoui

5:15. Withdrawn

5:30. Withdrawn

5:45. Improving the performance of biodegradable mulch films through polymer modifications. J.H. Wang, B. Zhou, Z. Wang, Y. Tian, Y. Bai

State of the Art in Protein-Based Engineered Materials
Silk/Protein Sequence Engineering for Tuning Materials Properties
Sponsored by CELL, Cosponsored by AGFD, COLL and PMSE

WEDNESDAY EVENING
New Orleans Marriott
Grand Ballroom

PMSE/POLY Plenary Lecture and Awards Reception

6:30. Plenary Lecture: Lessons learned from three decades at the helm of Polymers at NSF. Dr. Andrew J. Lovinger